The Iron A

A Review of the Hardware and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 10 Warren Street, New York.

Vol. XIII: No. 14.

New York, Thursday, April 2, 1874.

Four Dollars a Veav

An Improved Radial Drill.

surfaces are all scraped, and the wrought iron work is case-hardened. It has an ample slotted metallurgical authority of the world, seems to base upon which to bolt large pieces of work, and also has a revolving circular table 28 inches in diameter, which may be adjusted vertically to a hight of eight inches from its lowest point. A self-acting feed is provided, having three changes. This feed may be instantly disconnected and operated by hand when desired. The cone pully has four changes, and is driven by a four inch beit. The drilling spindle is of signed for the engines of a large naval steamer, steel. Its diameter is two inches, and it a piece of the opposite end, which was cold, traverses 12 inches. The ratio of speed be- and which was supposed to be strong enough tween the cone pinion and the drilling to transmit several thousand horse-power, spindle, is over six to one. A vertical dropped off. This was an extraordinary event, column carries a jib, which may be revolved but not unprecedented. In all such instances, entirely around the column, with the excep- the fracture seems to follow a plane passing tion of the space occupied by the driving through a comparatively sharp angle at the side point within the area described by the jib, except within the limited area occupied by the column and immediately surrounding it, when the head is adjusted as near as possible to the column. This bead has a radial movement of three feet. The machine is capable of drilling to the center of seven feet, when the head is adjusted to the outer end of the column. The small cone pulleys attached to the head slide along a horizontal shaft, which actuates the pulleys by means of a spline. The parts are massive and substantial, and the machine is capable of doing a large amount of very accurate work. If desired, a square table is furnished, which also acts as a cupboard, and has slots on four of its sides for holding knees or angle pieces, or any irregular piece of work. This table is not shown in the engraving, and is not furnished with the machine, except when

The Character of Metals, as Exhibited by their Fracture.

Prof. R. H. Thurston, says :

The effect of cold upon the properties of iron has been but little understood. One party of experimenters claim to have proven an increase, others a decrease, of strength with decrease of temperature. In a paper, originally prepared for The Iron Age* and since re-published by several other periodicals, the writer collated such information as then existed, from both scientific and engineering authorities, which showed that the general effect of low temperature seemed to be a decrease in power of resisting blows and an increase in power of resisting a steady strain, these seeming iv contradictory effects being the consequence of increased tenacity accompanied by a simultanous and yet greater decrease of ductility. Subsequent ex-periments by the writer, with the autographic testing ma-

Stevens Institute of Tech-

nology, in which errors of observation are avoided by so ar

ranging the apparatus that the specimen tested shall write

legibly its own story, have, to some extent, confirmed those deductions, but have revealed some reversals of the rule, and have indicated that good materials are better in both respects at temperatures not far removed from

The paper referred to was called forth by the request of the editor of the paper in which it first appeared, to whom Mr. Oliver Williams had forwarded a specimen of metal which had 75° Fahr., and at another place when at a templaced in the cabinet of metals and minerals, in the lecture room of the writer, at the Stevens Institute of Technology. The method of frac- Fah., the second was cast in green sand and greatly increase its elastic resistance. ture is stated to have been precisely the same broken at 70°. The beautiful crystalline strucin each case. The difference in appearance is very remarkable. The fracture at 70' is a strik.

ture of the former is apparently due, principolar prin ingly perfect illustration of the fibrous, as that at 20° is of the granular, fracture.

Judging from general experience, I should be inclined to consider this iron far less reliable are very characteristic specimens. Copper is of testing metals, will be interested in learning men with lead in it, is exhibited a ragged, dull, in cold than in warm weather. Careful experiment, however, is daily convincing engineers

* Iron Age, June, 1878. † Van Nostrand's Engineering Magazine. July, 1878; Journal of the Franklin Institute, September, October, 1878; London Iron, January, 1874, etc.

erful steam hammer was at work upon the red hot end of a very large shaft, originally de

that the distinction, here so well shown, is a steel, under different methods of treatment, is valuable wherever strength and toughness are work; and if each were to make public the rewith which it performs its work. The working elastic limit, permit the crystallline grouping of blance to the hardened specimen, which pre- liable to unsoundness.

far less reliable indication of the strength and shown by two specimens from the same bar of required in a cast metal. An increased propor-sults of his work, whenever evidently import-The New York Steam Engine Co., of No. 98 ductility of iron than was formerly supposed. fine cast steel. The first has been carefully antion of tin produces increased hardness and a ant, he would benefit the world without loss to Chambers street, have introduced an improved radial drill, of which the accompanying cut is an illustration. This machine merits especial mention, both on account of its size, the excellence of its construction, and the accuracy of shocks, which, straining the metal to the true steel, not having even the faintest resem-

> metallurgical authority of the world, seems to have been fully convinced of the possibility of the formation, in this way, of true crystals; acteristic of the best tool steels.
>
> Still another illustration of a peculiar modification of iron produced by special methods siderable strength and of great ductility, as is houses, than the water trains, for they were but direct experiment is still desirable to fully determine it. A singular instance of this peculiar molecular action recently occurred at the culiar molecular action recently occurred Morgan Iron Works, New York. While a pow- a marked increase of strength and of elasticity. brass made at the Stevens Institute. This speci- most care and watchfulness were required to erful steam hammer was at work upon the red in next care and watchfulness were required to prevent bollers and pipes from freezing, and more ductile alloys, as well as of the metal tin. during the snow blockade of 1871 this trouble The curious, irregularly wavy appearance of the most serious kind. The only the exterior, and the half fibrous, half granure relief promised was in boring artesian wells, lar fracture, are seen in gun metal, soft biass, and accordingly, last year, six were begun, and oroide, phosphor bronze, and many other ai-oys which have been tested. Metal workers first well is at Separation, 724 miles from Omaha, often make a free working and fine looking al- and the last one is at Rock Springs, 832 miles.



A correspondent writing from Colorado says: It became absolutely necessary, in moving the oy by uniting copper, tin and zinc. For some Another is in progress at Red Desert. The well purposes such a mixture is well adapted, but it at Rock Springs is 1145 feet deep the bore is often happens that, without suspecting it, six inches in diameter, and veins of coal are passed of 11, 6 and 5 feet, and of less width; in all 90 feet. There are layers of clay mixed with sandy loam, clear sand, and water-worn pebbles, in which the supply of water is usually found, layers of sandstone of varying degrees of density, beds of sulphate of alumina and iron chemically combined, resembling the peculiar bluish clay of some of the surface soi?.

All these layers are formed by detritus de-

posited by the action of water, and they are undersaid by the partly bituminous shale which appears at the surface at Green River, 15 miles west, and which, in that vicinity, projects in eminences of considerable hight. This general description of stratification is common to all of the wells. The incohesiveness of the soil caused much delay in borng, as the sides caved in; hence it became necessary to case with iron tubing a great portion of the way in all the wells. At this well of Rock Springs the water rises from the depth of 1145 feet 26 feet above the surface, and discharges 571 gallons per hour, and, at the surface, 560 gallons. At Point of Rocks, 25 miles east, the well is 1000 feet deep. The water rises only to within 17 feet of the surface, whence it is pumped, but the supply is abundant, and the quality of the water is the best of all the wells; indeed, it would be called remarkably good in any part of the world. Here only slight veins of coal were met. west, and which, in that vicinity, projects in

would be called remarkably good in any part of the world. Here only slight veins of coal were met.

The next well is at Bitter Creek, 21 miles east of Point of Rocks. It is 696 feet deep. It yields, by pumping, 2160 gallons an hour, and at the surface it flows 1000 gallons an hour. The veins of coals were quite thin.

Next, to the east, is the well at Washakie, 33 miles distant. It is 638 feet deep, and at 15 feet above the surface it flows 800 gallons an hour. At a depth of 97 feet there is a vein of coal six inches thick, and at 250 feet is a vein of hematite iron ore 12 feet thick, probably a spur of the deposit which crops out near Rawlins.

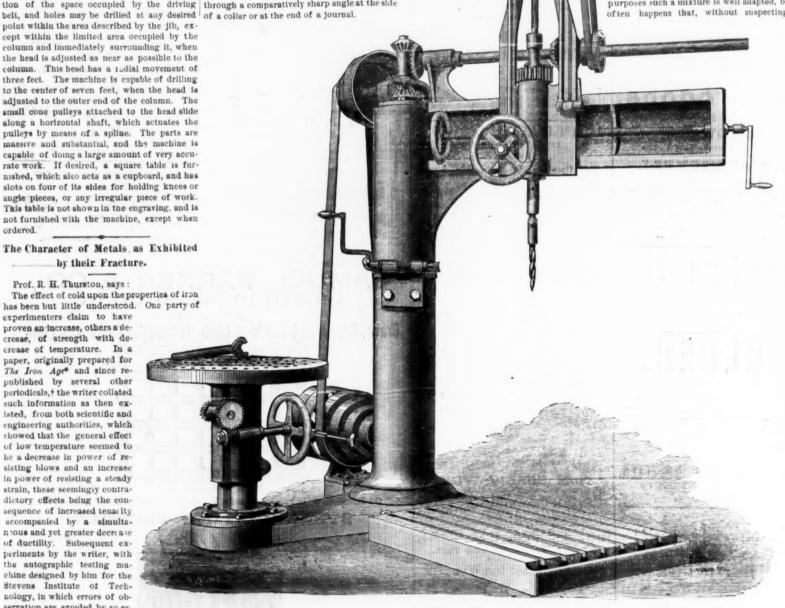
At Creston, 14 miles east, the well is 326 feet deep, and an ample supply of water is obtained. At Separation the well is 1103 feet deep, and water comes within 10 feet of the surface, which, by pumping, yields 2000 gallons an hour. This passes through several veins of good coal.

QCALITIES OF THE WATER.

QUALITIES OF THE WATER. The water in the various wells sometimes The water in the various wells sometimes holds in solution as much as 250 grains of mineral saits to the gallon; in some cases, from 40 to 80 grains of soda, magnesia and lime; then much soda, little magnesia and lime, which is said not to be in excess of water obtained at Omaha, in which there are 64 grains of soluble saits to the gallon, but consisting of much lime and magnesia, and but little soda. The effect of the water of some of there wells on the boilers of the locomotives is not desirable, as it forms a crust, and the engineers do not like to use it. The well of Point of Rocks seems a great favorite. The figures given above are obtained from Mr. Sickles, Engineer and Superintendent of the road; and, in conversation with tained from Mr. Sickies, Engineer and Superintendent of the road; and, in conversation with conductors and engineers, I gathered that the incrusting quality of the water would not exist if the iron tubing had extended all the way, since it is likely that the alkaline quality is derived from the upper strate, possibly, by solution. I learn also that there is a diminution of quantity in some wells, probably owing to caving in, which could not happen if the tubing had extended all the way down. Be all this as it may, the wells are such a success that it has cost no more to bove and equip them than it would have cost to run water trains up to the present time. What would be the effect of using the wells for agricultural purposes can present time. What would be the emmade; but it is certain that with hear steels, do not usually show a change in corm of fracture with change of temperature. It all temperatures likely to be experienced in his latitude, at least, they are equally reliable.

Two specimens of copper were also tested. Two specimens of copper were also tested. The first was east in dry sand and broken at 10' and a disposition of internal strains as to a disposition of internal strains as to

An artesian well is in progress at Denver, which is down 800 feet, and water has risen pally, to low temperature. The unsound structure of the latter is the consequence of using a damp mold, and exhibits the advisability of using dry sand whenever possible. The two are very characteristic specimens. Copper is strongest at low temperatures, and seems to lose none of its ductility. Forged specimens of copper, in all but color, resemble, when first the advisability of treating metals, will be interested in learning the effect of varying the proportions of copper, in all but color, resemble, when it is down 800 feet, and water has rinearly to the surface, but its ductility is hardly a sixth to of the pure copper and its allow. The fractured, the toughness and whenever possible. The two fractured, the toughness are the poculiar characteristics of this material. Those who have occasion to adopt the method and extensibility shown so plainly in the specific men with lead in it, is exhibited a ragged, dull, it is consulted and provided in the structured of the toughness. The sum of the pure copper and in many cases the effect of varying the proportions of copper, in all but color, resemble, when the surface of the pure copper and it alloy. The fractures how this change to the eye with unmiss takenable clearness. Instead of the toughness and no rock has been reached, it is now nearly 906 feet and water has rinearly to five pure copper and it alloy. The fracture shows this change to the eye with unmiss takenable clearness. Instead of the toughness and no rock has been reached, it is now nearly 906 feet and water has rinearly to five pure copper and it alloy. The fracture shows this change to the eye with unmiss takenable clearness. Instead of the toughness and no rock has been reached, it is now nearly 906 feet and of the pure opporated \$10,000 to five the pure and the original pure and very work in meals, every for and every worker in metals, every for and or every worker in metals, every for and or every work in metals, every for and or every work in metals, every for an and struction and the pure and the



AN IMPROVED RADIAL DRILL

been broken at 18° Fah, and the other at 70°

been broken at one point at a temperature of form of fracture with change of temperature. thorities at home and abroad. At all temperatures likely to be experienced in

The effect of cold is not always observable, in precisely what way this effect was produced the workman seriously injures his material by other at 70° Fab. The metal was a cheap grade most talented and distinguished scientific men mechanical properties. of wrought 110n, quite cold short, and very and engineers who had occasion to examine shear steels, do not usually show a change in experiments made upon it by well known au- resisting blows as the clean alloy.

perature of 20°. This specimen was afterward this latitude, at least, they are equally reliable. the effect of cold rolling is to render the iron cent. of zinc was added, was also tested in com-The first was cast in dry sand and broken at 10' such a disposition of internal strains as to

particularly with ductile iron, of which two was long a disputed point. No change of adding, for appearance sake, zinc to a bronze specimens were tested, one at 10 Fah. and the density had been detected, and some of the in proportions seemingly too small to affect its The writer has found the addition of but a

irregular. Two specimens from the same bar of good tool steel were also tested, one having this singular material, as members of the Interproperty fraction over one per cent. of lead, to a good national Jury at the Vienna Exhibition, found brass, to reduce its strength nearly a half, and it exceedingly difficult to credit the claims to cause a corresponding loss of ducility, thus The purest irons and low steels, and even the made for it, although sustained by reports of making it but about one-fourth as valuable in not be known, as no experiment

ing exterior, works well and takes a good polish.

Metals.

ANSONIA BRASS & COPPER CO

19 and 21 Cliff Street,

(Adjoining Office of Phelps, Dodge & Co.)

Sheet Brass Planished Brass, Polished Brass Door Rails, Brass Wire, Hayden's Patent Brass Kettles,

Sheet Copper, Planished Copper Copper Rivers & Burs, Braziers' & Belt Copper, Braziers' Rivets,

Copper Tubing, Copper Bottome, Copper Wire, Iron Wire, Fence Wire.

Brass Tubing, Lamp Burners, Sun Burners, A large variety of Wood and Bronze Case

MANUFACTORIES AT ANSONIA, CONN. Phelps, Dodge & Co.,

TIN PLATE, Sheet Iron, Copper, Pig Tin, Wire,

Zinc, etc.

COPPER and BRASS.

Cliff St., bet. John and Fulton,

NEW YORK.

T. B. CODDINGTON & CO., 25 & 27 Cliff St., New York.

Importers of PLATES

A. A. THOMSON & CO.,

'l Importers and Dealers in

Tin Plate, Sheet Iron,

ZINC, COPPER, WIRE,

Block Tin, Spelter, Solder, &c. Nos. 213 and 215 Water and 119 Beekman Sts.

NEW YOLK.

P. O. Box, 61.

N. L. CORT & CO.,

Tin Plate, Pig Tin,

SHEET IRON, SOLDER, ZINC, &c., &c.

220 & 222 Water and 115 & 117 Beekman Streets,

N. L. CORT,

NEW YORK

SCOVILL MFG. CO.

No. 4, Beekman St., New York.

MANUFACTURERS SHEET AND ROLL BRASS, BRASS AND COPPER WIRE

GERMAN SILVER, BRASS BUTT HINGES, KEROSENE BURNERS. METAL BLANKS CUT TO ORDER. CLOTH AND METAL BUTTONS, in every variety.

PHOTOGRAPHIC GOODS. AGENCIES: 4 Reekman Street, New York,

17 Beach Street, Boston, 137 State Street, Chicago. Manufactory, WATERBURY, CONN.

Lead Pipe and Sheet Lead

Improved Tin Lined Lead Pipe Block Tin Pipe, Bar Tin, Pig Tin,

Pig Lead, Bar Lead, Solder, &c. Colwell Lead Company, No. 213 Centre Street, New York.

EVANS & ASKIN

BIRMINGHAM, ENGLAND,

Refiners of Nickel and Cobalt.

VAN WART & McCOY, 43 Chambers St., New York.

Nickel and Cobalt always in stock

Fuller, Dana & Fitz,

BOSTON, . 110 North Street Tin Plates, Sheet Iron, Metals,

IRON, STEEL. Etc.
Wrought Iron Beams, Etc., for Buildings.
Exclusive Boston Agents for the sale of The "Burden
Best" Iron. Tennile Strength 78,000 lbs. Union Iron
Mills Outh Patient Beams, Channels, Etc. Patent Cold
Rolled Shafting. The Celebrated Bessemer Steel.
Brown's Original Concord Axics. The Salem Lead

Morris, Tasker & Co.'s Lap Welded Boiler Tubes. Swedish, Norway, English, American, and Scotch on. Russia Sheet Iron. FULLER, DANA & FIRE's Frice List on application. Metals.



Waterbury Brass JOHN SHERMAN, Agent,

No. 52 Beekman Street, NEW YORK. Mills at WATERBURY, CONN. Sheet, Rolled and Platers' Brass, CERMAN SILVER.

Copper, Brass and German Silver Wire BRASS AND COPPER TUBING,

COPPER RIVETS AND BURS, BRASS KETTLES, WASH BASINS,

Door Rail, Brass Tags & Step Plates.

BENEDICT & BURNHAM MFG. CO.

Rolled and Sheet Brass and German Silver, Brass, Copper and German

Silver Wire, and Beading.
Plain and Fancy Tubing, Brass and Copper
Rivets and Burs, Brass and German Silver
Castings, Plane-Forte and Wrought Brass
Butt Hinges, Coal Oil Burners, Lamps and
Lamp Scissors, &c., &c.

Depots—78 Reade St., N. T., 44 Sudbury St., Boston, and 17 N. Seventh St., Philadelphia. Capital \$400.000.

CHAS. BENEDICT, President and Treasurer. CHAS. DICKINSON, Secretary

PLATE TIN

PIG TIN,

in Store and For Sale by

A. A. THOMSON & CO. 213 and 215 Water St., NEW YORK.

W. & J. TIEBOUT. Manufacturers of

BRASS GOODS,

Galvanized & Ship Chandlery HARDWARE.

> 290 Pearl Street, New York. HARNICKELL

Offers for sale all kinds of

COPPER.

Old Copper bought and taken in exchange.

22 Cliff Street, New York.

Mosselman Assorted widths and numbers, by cask or sheet, i

store, at lowest rate. A. A. THOMSON & CO.,

213 and 215 Water Street, N. Y.

A. A. THOMSON & CO.,

218 & 215 Water Street, N. Y.

JOHN W. QUINCY, 98 William Street, New York, Dealer in

AMERICAN AND FOREIGN SPELTER, COPPER, TIN, NICKEL, And Metals generally.



Tubal Cain Metal Works, 1320 Callowhill St., Phila. Du Plaine & Co.,

ANTI-FRICTION METALS

Holmes & Lissberger,

COPPER,

Braziers' and Sheet Copper, Kettle Bottoms,

Bolts, Rivets, Strips, Circles & Tubes, PIG AND RAILROAD IRON,

Pig & Ingot Copper, Spelter, Solder, Tin & Lead.

255 & 257 Pearl Street, N. Y.

Agents for the New Haven Copper Co.

Metals.

The Plume & Atwood Mfg. Company,

MANUFACTURERS OF

Co. SHEET and ROLL BRASS and WIRE,

German Silver and Gilding Metal,

Copper Rivets and Burs,

Kerosene Burners,

Shoe Eyelets, Lamp Trimmings, &c. 80 Chambers Street, New York.

13 Federal Street, Boston.

THOMASTON, Ct. WATERBURY, Ct. EDWARD MILLER & CO.

4 Warren Street, N. Y. (1st Store from Broadway.) Manufacturers of

Sheet Brass, Patent Spun Bras Kettle Ears and Petroleum Can Tops,
Spouts and Trimmings,

Kettles,
Engine & Machinery
Oilers,
Kerosene Lamps,
Burners and Trimmings,

Rolling Mill,

Spouts and Trimmings,
mings,
Tea and Coffee Pot And Sheet Metal
Wares generally.

MILL AND FACTORIES, MERIDEN, CT.

BROOKLYN Brass and Copper Co.,

100 John Street, N. Y., Manufacturers of

Copper Sheets, Bolts, Wire, Tubes & Bottoms, Roll Brass, Wire. Tubing & Rivets.

Zinc Plates, Sheets and Tubes. Also, Patent Metal for Rooding, Linings for Bath Tubs, Refriger-ators, &c.; corsidered the best metal for Signs and Reflectors.

JOHN DAVOL & SONS. 100 John Street, N. Y.,

Ingot Copper, Spelter, Tin, Lead, Antimony, Solder & Old Metals.

eetire, etc.

Geo. W. Prentiss & Co., HOLYOKE, MASS.,

IRON WIRE.



Bright, Coppered, Annealed and Tin Plated. Plated.

Coppered Pall Bail Wire, Bolt Screw, Rivet, Belt Hook and Buckle Wire; Wire for the manufacture of Pins, Hair Pins, Wire Cloth, Heddles, Reeds, &c. Also, Clock, Machinery, Spiral Spring and Pano Pin Wire, Plated Plano String Covering Wire, Plated Hook and Eye and Button Eye-Wire, Tinned Broom Wire, fine Tinned Wire, and Tin-Plated Wire of all sizes and for all purposes. A specialty is made of the manufacture of

GUN SCREW WIRE of all sizes up to one half inch in diameter, straight-ened and cut to order. Special attention is giving to finishing orders to sample for particular purposes, where exactness of size is required. LS We work only the best Brands of Norway and Swedes Iron.

WEST BROADWAY WIRE WORKS

90 West Broadway, New York. Brass, Copper and Iron Wire Cloth



ROEBLINC'S

IRON or STEEL WIRE HOISTING, RUN-NING OF STANDING ROPES, OF BEST GALVANIZED CHARCOAL WIRE ROPES FOR SHIP'S RIGGING, Address, JNO. A. ROEBLING'S SONS, Manufacturers,

Trenton, N. J. or 117 Liberty St., N. Y. Wheels and Rope for transmitting power long distance. Send for Circular and Pamphlet, Mire, etc.

National Wire and Lantern Works.

Warehouse, 45 Fulton Street, New York.

HOWARD & MORSE, MANUFACTURERS OF

BRASS, COPPER AND IRON WIRE CLOTH,



Ship and Railroad Lanterns,



R. D. WOOD & CO., PHILADEL PHIA, Iron Water and Gas Pipe Lamp Posts, Retorts, &c.

Racod Mathews' Patent Hydrant. This Hy speriectly anti-freeing, is the most ornamental echespest made. R. PAINE. Selling Agent, Office, 178 Broadway, N. 1.

Mire, etc.

Washburn & Moen Mfg. Company WORCESTER, MASS.

Philip L. Moen, Prest. Chas. F. Washburn, Sec'y

IRON AND STEEL WIRE. WIRE RODS of all Grades; Round Iron, Rivet quality, 3-16 in. to ½ in., cut to any length. Owners and exclusive Operators of the

PATENT CONTINUOUS MILL,
Producing Iron and Steel WIRE, in colls of 100 pounds,
without SEAM or WELD.

without seam or weld.

Plain and Patent Galvanized Telegraph Wire,
Market and Stone Wire, Annealed Fence and Grape
Wire in long lengths; Coppered Fail-Bail Mire; Rope,
Bridge, Bolt, Screw, Rivet, Buckle and Chain Wire. Wire
for the manufacture of Card Clothing, Heedler, Reeds,
dec. Planostring Coverno and Spriss of Clock, Machinery, Gun Screw and Spriss Bring Wire,
and Refined Wire to Pattern for particular purposes,
from selected stamps of Norway Iron. Any grade of
Wire farnished, Annealed, Bright, Polished, Coppered,
Galvanized or Tin Plated. Wire furnished, Strightened
and Cut to any length.

Steel Crinoline Wire, Patent Linen Snish.

Steel Crinoline Wire, Patent Linen finish.
Unrivalled Steel Music Wire.
Steel Wire for Springs, Needles and Drills. Market
teel Wire kept in stock, all sizes. Warehouse, 42 Cliff Street, NEW YORK.

GILBERT, BENNETT & CO., GEORGETOWN, CONN., MANUFACTURERS OF

Iron Wire, Curled Hair & Glue Brass, Tinned and Iron Wire Sieves, Coal, Oat and Hair Sieves, Hair and Wire Gravy Sieves,

Brass and Iron Riddles, Brass and Iron Wire Cloth, Cheese Safes, Coal and Sand Screens, Wire Ox Muzzles. Also Painted Screen Wire Cloth. Wood Handle Stove Cover Lifters, Coal Hode

Pressed and Patent Cast Shovels, Sieve Scrapers and Pokers, Galvanized Conductor Strainers. GILBERT'S RIVAL ASH SIEVE. BLOOD'S PATENT FLOUR SIEVE.

Warehouse, 273 Pearl Street NEW YORK. All kinds of Galvanizing done expeditionsly, and on reasonable terms.

The highest price paid for Cattle's Talls and Hog's Hair. MANUFACTURERS OF THE UNION METALLIC CLOTHES LINE

WIRE, the best in use. Agents wanted.

HOWE, BIGELOW & CO., MANUFAUTURES OF

LAIN AND FANCY WIRE GOODS. Dish Covers, Corn Poppers, &c., 179 Main St., Worcester, Mass.

Illustrated Catalogue sent free on application. SAMUEL PARKER & CO.,

WETHERSFIELD, CONN. Brass, Copper and Iron Wire Cloth Locomotive Spark Wire Cloth,



No. 814, Mesh, No. 13 Wir

0x Muzzles, Wire Flower Stands, Brass, Iron and Galvanized Kiddles. STEEL CASTING BRUSHES.



Steel & Rattan Brooms & Flue Brushes, Plain & Landscape Wire. Window Screen Cloth a specialty; Wire Window Guards, etc.

TUCKER'S



Will furnish with first Order above case, gratis, fo Send for price list to the Trade TUCKER & DORSEY, Manufacturers Indianapolis, Ind.



Putnam's Government Standard FORGED

HORSE SHOE NAILS.

and warranted to give entire satisfaction. S. S. PUTNAM & CO.,

NEPONSET, MASS.

Trenton Vise & Tool Works.

TRENTON, N. J.

Hermann Boker & Co. 101 & 103 Duane St., NEW YORK, Proprietors.

Simple in their movement, exact in their make, and reasonable in price



2 2% 3 3% 4 4% 5 6 .\$8:00 4:00 5:00 5:75 7:50 9:50 11:00 16:00

GREEN

100 Chambers Street, NEW YORK.

Hardware Manufacturers' Agent. REPRESENT:

Cust Steel Forks, Rakes, &c. VERMONT SNATH CO., Sinths.
NORTH CAROLINA HANDLE CO., Axe and Pick Handles.
EXCELSION MFG. CO., Carringe Rims, Hubs and Spokes, Wood Hay Rakes.
EXCELSION MFG. CO., Hay, Manure and Shovel Handles. All kinds of Ash. and
Hickory Timber Sawed and Turned to order.
BIGNALL MFG. CO., Barn Door Rollers and Hangers. G. S. Fixtures, Pump, &c.



Ausable Horse Nail Go.,

Hammered and Hammer Pointed and Finished

HORSE NAILS,

BEST NORWAY IRON.

Orders promptly filled at lowest market rates.

ABRAHAM BUSSING, Secretary. 35 Chambers Street, New York.

GLOBE NAIL COMPANY,

Pointed, Polished & Finished Horse Shoe Nails.

Recommended by over 20,000 Horse Shoers.

All Nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

GLOBE NAIL CO., Boston, Mass.

C. HAMMOND & SON. Mfrs. of Hammers, Edge Tools, Railroad, Machinists' & Blacksmiths' Tools,



Unfinished Picks...... * 7.00 per do Finished Picks... Pittsburgh Broad Axes.... .. 20 A rer do:



EMMET HAMMER CO.,

HAMMERS AND SLEDGES AND CONTRACTORS TOOLS, BBOOKLYN, E. D., NEW YORK.





Leather Belting.

PAGE BELTING COMPANY.



GENERAL MILL SUPPLIES.

BRADFORD & SHARP,

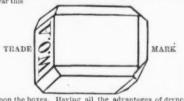
LeatherBelting

57 Walnut Street, Cincinnati, O.

We farnish many of the largest fron Mills in the West, and guarantee quality of all goods sold. Send for prices

Alexander Brothers,

THE PREMIUM REFINED BORAX



a in New York, Boston or Hartford.

BEACH & CO., Hartford, Conn., Agents.

UNION EYELET CO.,

PROVIDENCE, R. I. MANUFACTUREES

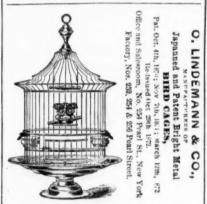
EYELETS. of every description

B. Long, Suspender, Bustle, A. B. 14, F. P 1, Skirt, Stationer's, Extra B. Long, Tag,

B. &c., &c. Corset.

Howard, Sanger & Co.,

Selling Agents, 105 & 107 Chambers St., N. Y.



T. C. RICHARDS & CO., 47 Murray Street, N. Y., Porcelain-head Picture Nails; also, Porcelain Picture, Drawer, Shutter, and Door Knobs, etc., etc. 31, 1 Importers of German Brass Goods, also, China, Gilt, Steel, and Silvere Enmiture Nails Wire Nails etc., etc. We particularly invite the attention

Tress Hoops, OHIO TOOL CO., Columbus, O. Large stock constantly on hand; any size made to order.

on good orders.

of large buyers to our Patent Picture

Nails and Knobs being a specialty

J. Clark Wilson & Co., Agents, 81 Beekman St., N. Y

Iron Domes.

The use of iron as a building material has, of ate years, largely increased, especially in works of magnitude and importance, in consequence of the very great facility with which it can be manufactured into almost any required form, and the almost unlimited strength it possesses very strongest that can be adopted, and this if judiciously treated and applied. Yet, notithistanding the enormous amount of iron curved outline has to be creeted. In such a loyed in all directions by engineers, it would ppear that very few of them deem it worth little flatter than that of the one below, so as to hile to learn anything about its capabilities follow as nearly as possible the curved outline and qualities as a building material. Architects r quired; the straight sides of each cone being , but they make but little effort to extend its curve. erials which have been used from time immebrick, stone or wood. Hence it is that when-Crystal Palace, an Albert Hall, a railway station, or such a dome as that of the Vienna Exhibition, the whole credit of the design and execution, the whole credit of the design and execution. ion is carried off by an engineer; although, perhaps, an architect may be called in to assist in the decorative features. And this state of things will continue to be so as long as architects are contented to take all their knowledge of iron construction at second hand from the an oblong or clintical plan has to be roofed engineers. It is, however, a matter for serious over; the great railway stations of the metrosion should be satisfied with simply endeavoring such edifices as the Altert Hall of the elliptical. In these cases the conical form may be modified out very limited knowledge.

in is all carried by the main ribs, and adds architect of taste would like to see erected. thrusting out the supports. The largest ex- esthetical considerations. imple which we possess of such a form of roof that over the reading room of the British the main ribs. The diameter is 140 ft., and the total hight 106 ft., being 1 ft. more in span than the domes of St. Peter's, at Rome, or Santa Maria, at Florence, and only 2 ft. less than that of the Pantheon at Rome. The weight of material used in the dome itself is said to amount to upward of 4000 tous, and this without any heavy lantern to carry at the top. We have quoted this example in order to draw a comparison between its principle of onstruction and that which is considered by Mr. Scott Russell to be the best that can be adopted where a very large area has to be coofed in, and which is the very reverse of that of the Museum roof. Mr. Russell's dome is a cone formed of a thin sheet of iron resting upon the summit of a circular wall, and quite independent of any ribs, braces, struts or ties. Such a cone is subjected to compressive forces cting up and down the slant side, and to tensile forces acting at right angles to the former all round the cone; these forces are not antagonistic, as they are in an ordinary beam; consequently, the resisting powers of the material have their full effect, and every part assists in strengthening every other part. No horizontal thrust is produced upon the sustaining wall, but the whole weight of the roof presses vertically upon it.

The dome, however, which Mr. Scott Russell spects from the simple form above mentioned, and which requires to have a uniform bearing ported. all round upon a solid wall, in order that the compressive and tensile forces may act equally in every part. At Vienna there was no such to the radical defect which belongs to iron, weighing 300 tons, had to be supported upon 30 iron stancheous 36 ft. apart. This arrangement of the supports necessitated the introduction of the vertical ribs and horizontal stringers which many architects appear to look upon as the main structure of the roof, but which are, in fact, quite unable to support even their own weight, their strength being derived from their being incorporated with the material of the cone itself; their main object is to distribute the reaction from the 30 points of support to every part of the cone, so as to prevent unequal strains arising in any part which might cause the plates to buckle; they also assi-t in carrying the weight of the lantern directly down to the supporting pillars. This dome has a diameter of 360 ft., its angle

of inclination to the horizon is 30°, and the but also with a considerable amount of risk to hight of the supporting columns is 80 ft., consequently, its hight to the spex, if completed stringers will aid the painters in getting all as a cone, would be 190 ft. The upper part is, over the outside, and will remove all risk of however, cut away, and a lantern placed accidents. Nevertheless, although iron is at thereon of a diameter equal to that of the the outset undoubtedly the cheapest building dome of St. Paul's Cathedral; this has a conical material we possess when its great strength is roof and a smaller lantern at the top, making a taken into consideration, yet, in consequence of total altitude of 300 ft. from the ground to the the frequent painting and other repairs which summit. Such a roof no architect, either in it requires, it becomes in time dearer than aldreamt of. We are accustomed to look with that ere long some effective means will be dis-Peter's and the Pantheon, at Rome, of Sta. highly useful material, so as to prevent our Maria, at Florence, and of the great temples of fluest modern "triumps of engineering skill," india, but none of these will bear any comparias they are often termed, from crumbling to son in size with that of the Vienna Exhibition dust before a generation has passed away. building, which is 21/4 times the diameter of the | London Building News.

largest of them. It is also the lightest dome for its size which has ever been erected, its total weight, including the lanterns, being less than that of the dome of the British Museum above referred to, which is only 140 ft. span, and has no lautern to carry.

The conical form of roof is undoubtedly the onstruction that architects see constantly em. case the dome should be built up of a series of frustra of cones, the slant of each being a ccasionally use iron in columns and gird- in fact, the chords of the arcs of the given Where a dome is elevated above the so that it might take the place of the ma- ground to a great hight, these slight deviations from the curved outline would be scarcely per orial, and with which they are more familiar, ceptible, provided the plates which formed the several frustra were only a few feet in width; r any very large building is erected, as a and by the use of curved ribs running from botreality and the arpearance of strength to the dome.

Although for very large structures the circu lar or polygonal plan may often be the best, yet there are numerous cases where a building of onsideration whether the architectural profes- polis being examples of the oblong plan, and oyed in former ages, rather than attempt to to suit the plan, as an elliptical cone or a halfep up with the rapid advance of the present spheroid of uniform thickness of metal would re, and meet its requirements by adopting the not be equally strained in all its parts, the tenise of a material of which our ancestors had sion being in proportion to the radius of curvature, and, therefore, greatest on the sides and least at the ends. In such a form of roof the een employed up to the present time in form- weaker parts must be strengthened, so as to ing domical from roofs of large span has been prevent the dome from getting out of shape, by creeting a series of curved or straight ribs springing from supports arranged at equal distances apart round a circular wall, or drum, just twice its width, Mr Scott Russell would and converging toward the central axis of the form the covering with a pair of circular cones buildings. The intervals between these ribs placed side by side; but this would make a are filled up in various ways, but the filling very hideous looking roof, and one that no nothing to their strength; horizontal ties, or design was actually prepared by Mr. Russell series of chain bond, are placed all round the for putting a roof over the Colosseum at Rome, outside of the ribs to prevent them from but he was induced to abandon the idea from

One great advantage to be gained from the use of iron in the construction of large works is Museum, completed in 1857 from the designs the rapidity with which they can be erected in of Mr. Sidney Smirke. This roof consists of that material as compared with those of stone 20 curved ribs of wrought fron, supported or brick. Much less scaffolding is also reupon stancheons of the same material, but with brick arches as the filling-in between serve as the scaffold for the next portion.

One part of Mr. Scott Russell's theory respecting the strength of his cone, which was rather sneered at by several members of the Institute, is that if one or two adjacent columns were to be removed, the dome itself would stand quite as well without them-in fact would hold them suspended in the air if their foundations sank from under them. The way in which he accounts for this peculiarity is by supposing the whole surface of the cone to consist of a continuous series of parabolic and hyperbolic chains, or approximate catenaries, the former in planes parallel to the slope of the cone, and the latter forming vertical sections taken through any points on the base. By means of the parabolic catenaries each point of support is connected with the whole of the opposite as well as with the adjacent side of the cone, so that each column is held in its place by a run ber of chains pressing uniformly over the whole cone, which enable the weight of the cone on one side to anchor the columns on the other side. The removal of two or three adjacent pillars, therefore, does not cause any part to be unequally strained, but only throws a greater amount of strain upon the whole surface of the cone. This theoretical point does not, however, in any way affect the question of the stability of a conic dome supported on a continuous drum, so as to have an equal bearing has eracted at Vienna differs in several re- at all points, which is the usual and proper way in which such a roof ought to be sup-

Before concluding our remarks upon the use

of iron in large roofs, we would cal attention and especially when used in rolled plates namely-its liability to rapid destruction from the action of air and moisture. This decay may be checked for a time by the process called galvanizing," or dipping the iron into a bath of zinc, but the protective effect of this process is lost after a time unless it is frequently painted over, and when once the rusting commences it will go on eating away the metal beneath the coating of paint, so that the stability of the whole structure becomes endangered thereby. The utmost facility ought, therefore, to be provided in all iron structures for access to every part, so that they can be frequently examined and repaired if necessary. The repair and frequent painting of domes like St. Peter's or St. Paul's, both inside and out, would not only be attended with great expense, the workmen; in the Vienna dome the ribs and ancient or modern times, ever appears to have most any other. It is therefore to be hoped wonder and admiration at the cupolas of St. covered by men of science for preserving this Fron.

NEW YORK.

GAM'L G. SMITH & CO.. IRON WAREHOUSE,

342, 344 & 346 Pearl Street, New York Importers and Dealers in

IRON STEEL,

SHEET AND PLATE IRON. Rod, Hoop, Band, Scroll, Horse Shoe, Angle and Tee Iron,

PIG IRON.

OLD RAILS, WROUGHT IRON BEAMS

PIERSONS & CO

Iron Warehouse,

24 Broadway, 77 & 79 New St., NEW YORK CITY.

IRON and STEEL,

Common and Refined Iron Rods, Hoops, Bands, Scrolls, Horse Shoe, Ovals, &c., &c.

Swedes, Norway, Lowmoor & Bagnalls. Orders filled from stock at lowest prices.

JACKSON & CHACE, Importers and Dealers in



IRON and STEEL. JOHN A. GRISWOLD & CO'S Bessemer Steel. MACHINERY STEEL, Cast Steel and

> SPRING STEEL ANGLE and T IRON. Special Irons for Bric Architectural Work.

ABEEL BROTHERS Successors to JOHN H. ABERL & CO.,

Iron Merchants 190 South Street and 365 Water, N. Y.

ULSTERIRON A full assortment of all sizes constantly on hand. English and American Refined Iron of choicest brands.

ommon Iron. Band, Hoop and Scroll Iron.

Norway Nail Rods. Korway Shapes. Cast, Spring and Tire Steel, etc.

Alfred R. Whitney,

IRON STEEL

Angle and T Iron.

To 30 feet in length, constantly on hand. 56, 58 & 60 Hudsen, and 49, 51 & 53 Thomas Sts., N. Y. English and American Manufacturers' AGENT FOR IRON

Fire-Proof Buildings, Bridges, &c. Books containing Cuts of all Iremail. Sample Pieces at office.
Please address 58 Hudson Street.

BORDEN & LOVELL. **Commission Merchants** 70 & 71 West St.,

New York

Agents for the sale of

Fall River Iron Co.'s Nails, Bands, Hoops & Rods,

Borden Mining Company's Cumberland Coals.

A. B. Warner & Son. IRON MERCHANTS,

28 & 29 West and 52 Washington Sts. BOILER PLATE,

Beller Tubes, Angle, Tee & Girder Iron, Holler and Tank Rivets. Sole Agents for the celebrated

Eureka," Pennocks, Wawasset," Lukens,

ends of Iron. Also all descriptions of Plate, Sheet at the dissometer Iron. Special attention to Locomotive irur. Fire Box Iron a specialty.

Eron.

NEW YORK.

Conklin & Huerstel, IRON MERCHANTS.

99 Market Slip, N. Y. English and American Refined Iron, COMMONIRON,

Band, Hoop and Scroll Iron, Horse Shoe Iron & Horse Nails, Norway Nail Rods and Shapes, Cast, Spring, Toe Calk and Bessemer Tire Steel.

Sole Agents for the Celebrated Horse-Shoe Brand HORSE RASPS.

WM. GARDNER,

575 Grand, 414 Madison & 309 Monroe Sts. Bar, Hoop, Rod, Band and Horse Shoe Iron. AGENT POR

Best Norway N. R. & Shapes, Spring, Toe Calk, Tire & Sleigh Shoe Steel.



POWERVILLE

JOHN LEONARD,

450 & 451 West Street, NEW YORK. Manufacturer of all sizes of MERCHANT RON and HOOPS. Also Manufacturer of

Best Charcoal Scrap Blooms. And Dealer in Old and New Iron Steam Engines, Boilers and Tanks.

GILEAD A. SMITH & CO., 23 Change Alley, Lombard St., No. 30 Pine St., N. Y.

P. O. Bex No. 5070. RAIL ROAD IRON

In Ports of New York & New Orleans.

Steel Rails of most approved Makers. Importers of Old Iron Rails for re-rolling

Bills of Exchange on Imperial Bank, London

Marshall Lefferts, Jr.,

90 Beekman St., New York, MANUFACTURER OF AMERICAN

Galvanized Sheet Iron,

Easton Sheet Iron Works, Easton Pa. MANUFACTURER OF

Best Bloom, Charcoal & Refined Sheet Iron Galvanized Telegraph and Fence Wire Galvanized and Tinned Roofing and Slating

Nails. Galvanized Ten Kettles. Galvanized Hoop Iron of all widths. Galvanized Staples.

Corrugated Iron for Roofing, plain or gal'd. Galvanized Bars and Chains for Cemetry Railing.

S. WHITNUM, Manufacturer and Galvantzer of

Coal Hods, Water Pails, Baking Pans, &c.

Galvanizer of Sheet Iron, Nails, Spikes and Tinned Roofing Nails, Wire, Hoop and Band Iron. Iron Work for Cemetery Purposes furnished complete. Factory, cor Clay and Franklin Sts. GREENPOINT, L. I.

MAZON INS. CO. Cincinnati, O.

Cash Capital, - - \$500,000.

WITH AMPLE

Re-Insurance Reserve.

GAZZAM GANO,

B. D. WEST.

Fron.

NEW YORK

HAZARD & JONES, BROKERS.

NEW & OLD RAILS FOREIGN AND DOMESTIC

Pig Iron, Wrought & Cast Scrap Iron, &c.,

WM.H.PETIT PIKE 5 BROKERS IN IRON &

212 Pearl St., New York.

272 WALL ST NEW-YORK JAMES WILLIAMSON & CO.,

SCOTCH AND AMERICAN

No. 69 Wall St., New York. F. JUDSON

SCOTCH AND AMERICAN IRON.

Wrought and Cast Scrap Iron. 457 and 459 WATER STREET, And 235 SOUTH STREET, near Pike, NEW YORK.

JOHN W. QUINCY, 98 William Street, New York Dealer in

Anthracite & Charcoal Pig Irons, OLD SCRAP and CUT NAILS. Patent Lock Nut and Washer, and Fish Plates for Rail Roads.

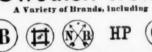
BOONTON CUT NAILS, HOT PRESSED NUTS.

> Machine Forged Bolts, Washers.

Fuller, Lord & BOONTON IRON WORKS,

139 Greenwich Street. New York.

Swedish Iron.



BARS suitable for Steel of all grades, Wire, Shovels, Hoes, Scythes, Carriage Bolts, Nail Rods, Tacks, etc.

CHARCOAL PIG IRON for Bessemer and MUCK HARS for Steel Smelting and Re-rolling. SCRAP or HAR ENDS.

Direct Agency for N. M. HÖGLUND, of Stockholm, represented in the United States by NILS MITANDER,

69 William St., New York. DANIEL W. RICHARDS & CO., Importers of and Dealers in

SCRAP IRON. Pig Iron, OLD METALS

86 to 104 Mangin St., Foot of Stanton St., E. R. 71 to 79 Tompkins St. New York. OFFICES,

90 & 92 Mangin Street, New York, 30 The Albany, Liverpool, England.

The Corrugated Metal Co D. F. Towner, East Berlin, Ct. G. W. Cook, Secy. Prest. & Tro. East Berlin, Ct. N.C. North, Supt.

Manufacturers of
PATENT CORRUGATED FIRE-PROOF SHUTTERS, of Superior Quality.
The best shutters known for protection against fire.
New York Office, 44 Centre St., Noves & Wines. Agents

P. W. GALLAUDET. Banker and Note Broker,

Nos. 3 and 5 Wall Street,
NEW YORK.
HARDWARE, METAL, IRON, RUBBER, SHOE,
PAPER AND PAPER-HANGINGS, LUMBER, COAL AND RAILROAD PAPER WANTED ADVANCES MADE ON BUSINESS PAPER AND OTHER SECURITIES.

T. B. CODDINGTON & CO., 25 & 27 Cliff St., New York

Bar Iron, Sheet Iron, &c

Fron.

NEW YORK.

HARRISON & GILLOON IRON AND METAL DEALERS,

538, 560, 562 WATER ST., and 302, 304, 306 CHERRY ST. NEW YORK.

ve on band, and offer for sale, the following: scotch and American Pig Iron, Words, Cast and tchinery Serap Iron, Car-Wheels, Auges and Heavy rought Iron: also old Copper, Composition, Brass ad, Fewter, Zinc, &c.

JOHN F. PFEFFERLE, SCRAP IRON AND OLD METALS, BAR AND PIG IRON.

New and Second-Hand Anchors, Chains and Ma of all descriptions. Nos. 531 & 533 Water St., N. Y.

PETTEE & MANN,

Ulster, English Refined & Common BAR IRON, Scotch and American Pig Iron, Wrought & Cast Scrap Iron, &c., &c.,

228 & 229 South and 449 & 451 Water Sts., N. Y. highest price paid for Wrought and Cast Scrap Storage for Pig. Bar and Railroad fron taken at

OXFORD IRON CO., Cut Nails and Spikes,

R. R. Spikes, Splice Bars and Nuts and Bolts. 81, 83 & 85 Washington, near Rector St, N. Y

COLLIER & SCRANTON, Agents. DAVID CARPENTER,

HOT PRESSED NUTS,

All kinds of Refined Bar & Horse Shoe Iron, 402 Water Street, New York.

U. O. CRANE. BROKER IN

PIG IRON & METALS,

104 John St. New York. H. L. GREGG & CO., Ship Brokers & Commission Merchants,

Old Iron, Metals and Rags Freight engagements made to all parts of the v Marine insurance effected in reliable offices.

108 Walnut St., Phila THE SPRINGFIELD IRON COMP'Y SPRINGFIELD, ILLINOIS,

now ready to receive orders for the manufacture IRON RAILS,

Of a quality second to none. Capacity of Works, 25,000 tons per annum.

Chas. Ridgely, Prest. J. W. Bunn, Vice Prest
George M. Brinkerhoff, Secy
E. A. Richardson, Supt Agent in New York.

GEORGE T. M. DAVIS, 47 Exchange Place **BURDEN'S** HORSE SHOES.

Burden Best" Iron.

Boiler Rivets.

Burden Iron Works, H. Burden & Sons, Troy, N. Y.

Established in 1849.

THE Jackson & Woodin Mfg. Co.

Car Wheels and Cars,

Successors to JACKSON & WOODIN,

BERWICK,

COLUMBIA, CO., PA.



Fron.

PITTSBURGH.

Pittsburgh Foundry. A. GARRISON & CO.,

CHILLED AND SAND ROLLS,

Ofacknowledged superior quality, at the lowest cur

Ore and Clay Crushers, and Rolling Mill Castings,

of every description Office and Warehouse, 209 Liberty Street. PITTSBURGH. PA.

PENNSYLVANIA IRON WORKS.

EVERSON, GRAFF & MACRUM.

Pittsburgh, Pa.,

Manufacturers of every description of

Bar, Sheet and Small Iron, Fine and Common Sheet Iron, W. P. TOWNSEND & CO.,

WIRE and Black and Tinned Rivets

OF CHOICEST CHARCOAL IRON.
Rivets any diameter up to 7-16 inch and ANY L'ENGTH 19 & 21 Market St., PITTSBURGH PA. Boston Rolling Mills

Manufacture extra quality small Rods, from best se-lected Scrap Iron. Swedish and Norway Shapes. NAIL and WIRE RODS. Also HORSE SHOE IRON. HOSTON ROLLING MILLS, W. B. ELLIS, Treasurer.

Office, 17 Batterymarch St., Boston. "PEMBROKE" Round, Square & Flat Iron. 'FRANCONIA" Shafting & Bar Iron. Extra quality when great strain or superior finish required. Also, Irons for ordinary work, like the ENGLISH REFINED." WM. E. COFFIN & CO.,

No. 8 Oliver Street, Beston.

New York Agents, JEVONS STROUD & CO., 104 John St., N. Y. PACKARD, GOFF & CO. Youngstown, O.

Merchant Bar Iron. Mills at Hubbard, O.; also Jobbers

Nails, Nuts, Washers & Carriage Bolts. Bonnell, Botsford & Co., Iron, Nails & Spikes.

YOUNGSTOWN, OHIO. ALTHOUSE & UMBERGER, Commission Merchants

PIG IRON, Pottsville Spike, Bolt and

Nut Works. G. D. ROSEBERRY, Pottsville, Pa. RAILROAD SPIKES MINING SPIKES.

Cold Pressed Nuts, Machine Bolts & Bolt Ends. Clement & Hawkes Mfg. Co.,

Manufacturers of SHOVELS.

Planters' Hoes, Trowels and Machinery, Northampton, Mass. Send for Circular and Price List. Tubal Cain Metal Works,

1320 Callowhill Street, Philadelphia. Du Plaine & Co.,

BRASS CASTINGS for Rolling Mills, Machine, Ship and Car Work

PORTER & STENTON Mineral City Mining and Smeiting Co.,
7 Public Landing, Cincinnati. O.

Send for a circular. Orders promptly attended to by our New York Agent,

W. A. STAGG, 68 Broadway.

Fron.

PHILADELPHIA.

Street Rails

Of Best American and English Makes. CHAIRS, SPIKES, FISH BARS, RAILROAD SUPPLIES.

Muck Bars, OLD RAILS, Scrap, BLOOMS.

American and Scotch PIG IRON, AND METALS. CHAS. W. MATTHEWS,

133 Walnut St., Phila. (Late RALSTON & MATTHEWS, 183 Walnut St.)

MALIN BROS., IRON

Commission Merchants,

No. 228 Dock Street, 3d door below Walnut, PHILADELPHIA. BLAKISTON & COX,

IRON Commission Merchants,

No. 333 Walnut Street, PHILADELPHIA.

THE CAMBRIA IRON WORKS,

Strated on the line of the Pennsylvania Rail Road, at the western base of the Alleghany Mountains, are the largest of their class in the United States, and are now prepared to make

1800 TONS PER WEEK,

Of Iron and Steel Railway Bars.

The Company possesses inexhaustible mines of Coal and Ore, of suitable varieties for the produc-tion of Iron and Steel Rails of

BEST QUALITY.

Their location, coupled with every known im-provement in machinery and process of manufacture enable them to offer Rulls, when quality is con-

enable them to offer Rulls, when quality is considered, at lowest market rates.

The long experience of the present Managers, of the Company, and the enviable reputation they have established for "CAMBRIA KAILS," are deemed a sufficient guarantee that purchasers can at all times depend upon receiving rails unsurpassed for strength and wear by any others of American of foreign make. Any of the usual patterns of rail-can be supplied on short notice, and new paterns of desirable weight or design will be made to order. Address,

CAMBRIA IRON COMPANY 218 S. Fourth St., PHILADELPHIA. or at the works, JOHNSTOWN, PA.

S. FULTON & CO.,

Pig Iron and Cast Iron Gas and Water Pipes.
ALSO HEAVY AND LIGHT CASTINGS PLYMOUTH IRON WORKS, CONSHOHOCKEN, PA.
Office, No. 242 S. 34 St., Phila.

W. GRAHAM HOOPES

THEO. TREWENDT

Commission Merchant

SAMURL FULTON.

Pig, Bloom, Plate, Bar & Railroad

IRON,

No. 419 Walnut Street, Philadelphia.

The Phœnix Iron Co.,

410 Walnut St., Philadelphia.

MANUFACTURERS OF CURVED, STRAIGHT AND HIPPED

Wrought Iron Roof Trusses BEAMS, GIRDERS, AND JOISTS, and all kinds of Iron Framing used in the construction

Deck Beams, Channel, Angle and T Bars

curved to template, largely used in the construction of Iron Vessels.

Pat. Wrought Iron Columns, Weldless Eye Bars.

for Top and Bottom Chords of Bridges. Railroad Iron, Street Rails, Rail Joints and Wrought Iron Chairs.

Refined Bar, Shafting, and every variety of Shape Iron made to order. Plans and Specifications furnished. Ad-

SAMUEL J. REEVES Vice Pres.

G. A. HART, Old and New Rails, Muck Bars, PIG AND SCRAP IRON, COPPER, &c. 208 Walnut St., Philadelphia

TUBAL CAIN METAL WORKS, Offices & Warerooms, 1820 Cailowhill St. Foundries & Smelting Works, 1908 to 1805 Button wood St., Phila.

Du Plaine & Co., REFINED SOLDER.

E. gineers', Machinists' and Plumbers' Supp

The Pipe Founding Trade in Glasgow.

Among the many specialties of manufacture in connection with the iron industries of Glas-Iron and Steel T and gow, the production of cast iron pipes for conveying gas and water is entitled to very high rank; indeed, Glasgow may be regarded as the headquarters of that branch of the iron trade. In setting up such a claim for that great industrial city, we are not unmindful of the fact that Middlesborough, the capital of Cleveland, and South Staffordshire, have both acquired a reputation in the same line of manufacture of very considerable importance. It is in Glasgow. however, that the manufacture of cast iron pipes, as now conducted, may be said to have originated; and it is certain that in that city it has had its fullest development and greatest ommercial success, while it is none the less ertain that the mechanical success attained by he pipe founders of Glasgow has become quite a special feature in the engineering progress of recent years.

There are at least four firms in Glasgow who are extensively engaged in the manufacture of both large and small cast iron pipes, and there are quite as many more whose business lies more exclusively in the production of the smaller sizes of pipes. It is only of the former that we propose to speak at present, namely : Messrs. Thomas Edington & Sons, Messrs. D. Y. Stewart & Co., Messrs. R. Laidlaw & Son, and Messrs. Robert Maclaren & Co., more espe cially on account of the fact that they employ machinery on a large scale in the production of their goods. The extent to which this branch of trade is pursued may be judged of when we mention that the machine made pipes have been sent from Glasgow to almost all parts of the world-to the United States of America: Hamilton (C. W.), Toronto, Quebec, Montreal and other places in the British North American Colonies; to Buenos Ayres, Río Janeiro, Monte Video, etc., in South America; to Hobart Town, Launceston, Sydney, Melbourne, New Zealand, etc.; to Madras, Bombay, Calcutta, and other places in the far East; to Cadiz, Turin, Trieste, Odessa and various towns in Germany and other Continental States; while the success of the water schemes of Glasgow. Edinburgh, Dundee, Dublin, Liverpool and other cities and towns at home has been largely dependent upon the quality of the goods supplied by the Glasgow pipe founders.

The origin of the application of machinery in pipe founding may be traced back to an observation made to his employer by a Montrose mechanic, after the latter on one occasion re turned from a visit to Glasgow about thirty years ago. He had noticed during that visit that what were then deemed large orders for water and gas pipes were sent from abroad to was to the effect that if his employer could devise some machine for casting pipes, there was a wide field open for him, and he might make a grand pecuniary "hit." Soon afterward experiments were commenced, which showed that the casual observation of the employee had taken deep root in the mind of the employer. To show that the observation had taken deep root and occupied his mind most persistently during his waking hours, it may be mentioned that on a certain Sunday, when he was sitting in the place of worship which he frequented, he could not refrain from watching one of the he could not retrain from watching one of the iron columns by which the gallery of the church ented in the year 1853, by Messrs. David Law was supported and eventually the idea of a and John Inglis, both of whom were at that was supported, and eventually the idea of a peculiar screw-like piece of machinery flashed across his mind. In imagination he saw that consists essentially of a skeleton pattern, which piece of mechanism rotating outside the column, and forming, as it were, the mold in which a similar column might be cast, pipe to be produced, and of a series of steel Both the employer and the employee set to work in thorough earnest, and with a determination to give that idea a successful trial. They shut themselves up in the workshop, away from all peering, inquisitive eyes, as many inventors had done before them, and in course of time the happy conception which had its birth in the sacred place was realized, and found to be perfectly practicable. In the year 1846, he who conceived the idea, Mr. D. Y. Stewart, the senior partner of one of the Glasgow firms already named, secured a patent for his invention, and he had the pleasure of securing as his first order a contract to sup-

oundry was then situated business to Glasgow, where, in the mouth of openings, probably 20 or so, through the sand. October, 1847, he broke ground for the erection | These are called ports or gates, and by means of the very extensive works now owned by himself and Mr. Howard Bowser, under the title of D. Y. Stewart & Co. The works referred to are of distinct streams distributed uniformly round devoted exclusively to the production of cast the core. This is certainly a very decided imiron pipes, and, considering that the beginning was so auspicious, it is but natural to suppose that the early reputation of the founder of the business has been continued in the firm in which he is so honorably conspicuous. It can improvements effected, not the least important scarcely be said that much radical alteration

other common sizes are invariably made twelve The invariable practice now pursued, and insisted on in most specifications, is for the much importance to a sound, solid socket. They also generally stipulate for a belt or head of, say, eight inches, to be cast on the upper end, into which all the scoria and other impurities are floated and collected. This is aftering that the length of the pipe, as cast, must be about close upon fourteen feet, and that the molding-box in which the sand-mould is formed stands upon a wheeled truck or carriage, to which one-half of it is permanently fixed, the molding machine must of necessity be of somewhat gigantic dimensions. It is formed of two hollow standards, thirty feet high, with all the necessary framing for giving rigidity. Within each standard there are placed or suspended suitable balance weights, and between the standards there is that essential part of the mechanism-the ramming-machine. It consists of a sort of drum, called, technically, the " pattern," the diameter of which is the same as the outside of the pipe to be cast, after due allowance is made for contraction, and the depth of which is about twelve or fifteen inches. This pattern or drum has three wings or rammers attached to it, which are each twenty-two inches long (in a machine for making three-feet pipes, such as we saw at work), and have an incline or pitch of about 11/4 inches in that length; and thus, when the pattern or drum carrying these wing-like attach ments revolves upon its center, the latter exert sort of screwing motion upon the molding sand within the molding box. By means of the requisite gearing, the pattern, with the winglike rammers on its circumference, is made to rise as the thin casing of sand forms, which is ultimately to become the mold. This casing for a three feet pipe is made only about one difference of only two per cent. from the aver inch in thickness. The ramming has to be done with a due amount of care, in order that there of the gases escaping with the requisite free- if there is much difference of temperature be dom, while at the same time the sand mold shall have the necessary amount of cohesiveness and the time of casting, or if there is any marked power of resistance; and as timed on the occasion of our visit to Messrs. Stewart & Co.'s works, the rate was about fourteen feet in seven these causes of variation in the weight of the minutes. No skilled workman is employed in pipes may almost entirely be avoided, and then the operation just referred to, nor, indeed, are tions required in the production of machinemade pipes. Messrs. D. Y. Stewart & Co. make pipes down to three inches in diameter, but it is only in forming the molds for pipes of less be executed in Glasgow, and his observation than twelve inches in diameter that hand ramming is resorted to. The operation of machine ramming is made as nearly as possible to imitate the most perfect hand ramming, which also in-

olves a sort of screw-like motion. At Messrs. Maclaren & Co.'s works the me chines employed in ramming molds for large pipe are constructed on practically the same principle as those employed by Messrs. D. Y. Stewart & Co., but at the Phonix Foundry (Messrs. Thomas Edington & Son) a machine is employed which was first devised at that famous establishment, and which has now arrived at great perfection. It was invented and pattime connected with the Phænix Foundry. It s, in short, a cylinder several inches in length, and of the same diameter as the outside of the bars outside it, which are in constant motion, rotating independently on the patterns, and rising and falling along with it, by which motions they act as a circle of ramming tools. The operation is exceedingly beautiful and effective, while it is also rapid and uniform in execution, requiring only three minutes for a pipe 12 feet long by three in diameter.

The sand molds, after being completely formed, are black-washed and prepared for admission into the drying stoves. At Messrs. D. Y. Stewart & Co.'s one of the preparatory measures is to form a groove or channel in the top of the sand mold and all round it, the formed on the top of the molding box of the metal, which is delivered into the groove or gutter, gets access to the mold in a number provement upon the method of delivering the metal into the mold in a single large stream.

Since the introduction of machinery for nolding pipes there have been many collateral of which is the method of forming the cores. finished and ready for delivery, is always nine through the metal from top to bottom, and quired that specimen test bars of the metal to deposited

to be formed, the bar is opened out to its fullest sand adheres to the bar after the box or barrel is lifted off, and it is then passed into the dry ing stove and afterward coated with black wash, when it is ready for being placed inside ward cut off, so as to leave the pipe sound the mold. The setting of the core within the throughout its whole length. Now, consider-mold is effected with such great accuracy that their surfaces are made absolutely concentric. and therefore the casting cannot fail to be sym metrical. By applying machinery in the make ing of a perfectly cylindrical core, and remov ing from the hands of the workman all the es sential parts of the process which require hi attention, an accuracy is obtained which can not otherwise be reached. When the pipe is cast and the metal has set sufficiently, the iron wedges are taken out of the core bar, which then collapses and is easily removed—the truck carrying the mold and the contained pipe being run out into the yard, where one-half of the mold is removed, and the pipe lifted out by a crane and laid down horizontally for the subse quent operations.

Pipes made on D. Y. Stewart & Co.'s collaps ing core-bars are beautifully perfect castings There is not such a thing as a ring or wave to be seen on them, while in loam-core pipes they are very frequent. They are so straight that lots of several thousand pipes may be passed by the inspector without a single instance of a rejected pipe occurring. After allowing for the roughness of the skin, by this method of casting pipes are taken out of the mold almost as fair as from the turning-lathe. And the equality of the weights of these pipes is such, that a few years ago a lot of fifty pipes three feet in diameter, taken at random, were found on being weighed to range between 49 cwt. 2 qrs. 14 lb., and 47 cwt. 2 qrs. 14 lb.-s age, while the general average was within 1.166 per cent. Variation may arise if there is any may be a sufficient degree of porosity to admit increased softness or hardness in the ramming, tween the core-bar and the molding-box at difference in the specific gravity of the metal. But by exerting a moderate amount of care all it is no uncommon thing for a number of pipes there any employed in the various other opera- to pass the weights without the weights being altered to a greater extent than within the limits of 14 lb.

The core bar in use at the Phoenix foundrywhere loam is used rather than sand-is formed of four bars, of which two are attached top and bottom to rings, while the others are held in place by means of a screw and nut on the center spindle. When the pipe is cast the nut is slackened a little, and the loose bars are drawn up from their seats by the crane, and the bond of the loam being thus broken, the core bar can be drawn out in its entirety with the greatest of ease

The pipes are subsequently cleaned internally, and chipped and dressed externally, and cut to the proper length. For the purpose of being preserved from rusting during one or two other operations, they are sometimes coated with dead A very important operation is that of turning and boring the ends for the formation of water-tight joints, and great ingenuity has been brought to bear upon the necessary machinery. So perfect is the fit now made by ma-chinery that the lead and rope yarn system of jointing for large pipes is almost entirely un-known in practice, and the saving on the item of jointing has been said to runge from thirty to nfty per cent. by using turned and bored

It is of the utmost consequence that cast iro pipes, such as we are speaking of, should be able to withstand the great hydraulic pressure to which they are afterward subjected when in se, and, therefore, in all pipe foundries there may be seen one or more powerful hydraulic presses or proving machines. Such items as the following are found in all specifications for east iron water pipes: These three-fourths of an inch thick are to be subjected to a bydroply 200 tons of his machine made pipes for the thickness of the sand at the top being several static pressure equal to a column of water 400 threefold by steam pressure from above. This water-works of Montrose, the town in which his linches, owing to a curved overhanging lip beinch in thickness beyond three-fourths, with an Mr. Stewart soon resolved on transferring his from that groove there are pierced a series of increased pressure equal to eighty feet of additional head; and while the pressure is on, the pipes are to be struck repeatedly with a hammer weighing 6 pounds, and should any water spout, sweat or ooze through any part, they are to be rejected. Sometimes a head of 300 feet is deemed sufficient, but in other cases it may be that 600 feet of head is stipulated.

During recent years Dr. Angus Smith's patent method of coating east-iron water pipes has come into almost universal use. It was first used by Mr. Batcman, in the Manchester Water Works. The material employed, which is composed essentially of coal-tar, is kept in a liquid

feet; but those of three feet in diameter and which is then sprung open. When the core is be used shall be cast, so that, when the engineer or inspector so desires, one or more of those feet long, exclusive of the socket or faucet. extent, and kept open at the slit by means of bars may be subjected to a mechanical test in iron wedges. There is a circular bottom plate, his presence. Not unusually the bars are three to which both it and the core bar barrel are and a half feet long, two inches deep, and sockets to be cast down, as engineers attach fixed, and in the annular space between them one inch thick, and they are placed on the sand is rammed. This firm, solid coating of supports three feet apart, while it is required that they bear, without breaking, a weight of 30 cwt. hung at the center. Sometimes other dimensions and resisting strains are required in contract specifications. Two very ingenious and effective testing machines have been invented in Glasgow, and successfully worked in the pipe foundries of that city, one of them by Mr. John Downie, who was for a number of years the chief manager of Messrs. Thomas Edington & Sons' extensive works, and the other by Mr. H. J. H. King, during his residence in Glasgow as the representative for the contractors for the Calcutta Water Works The mixture which we saw used at one of the works named consisted of Summerlee No. 3, Monkland No. 1, Dalmellington No. 4, and a small proportion of Middlesborough No. 4, one on of the mixture requiring 1 cwt. 3 qr. 14 lb. of coke, and about 1/2 cwt. of limestone as flux. For the purpose of verifying the quality of the work executed, so far as the proper uniform thickness of the pipes is concerned, ingeniously constructed callipers have been brought into use, one pair having been devised a few years ago by Mr. H. J. H. King, and the other by Mr. John Page, C. E., of Glasgow, a gentleman whose professional connection with pipe founding contracts extends to well-nigh a quarter of a century. In practice, if a pipe is the proper thickness at the ends, experience shows that it is usually correct all through; but by means of the callipers now brought into use the thickness may be determined at any point with the utmost

An Iron Works in Sweden.

facility .- Iron.

The Sandviken's Iron Works are probably the largest in Sweden, and are situated in the mmediate vicinity of the Sandviken's railway station on the Falun-Geffe line of railway, which was one of the first of the important railways constructed in that country works are distant from Geffe about 15 English miles, and are particularly remarkable as havng a larger production of Bessemer steel than any other iron works in the country, having adopted that process as a specialty.

These works are provided as an auxiliary with powerful steam engines; nevertheless like most other Swedish industrial establish ments of the kind, water-power is ordinarily employed for driving the machinery. This hydraulic power is obtained from the neighboring River Jedera, being conveyed therefrom by a canal nearly two miles English in length; and it is rated at a gross total of 600 effective horse

The bulk of the molten pig iron at these works is manufactured into iron or steel of different qualities, suitable for various purposes, by means of a special process, which is very rapid in its operation, as it only takes about 10 minutes. This is effected in peculiar, large, suspended, egg-shaped furnaces, nto which the mass of molten metal is allowed o flow directly from the blast furnaces.

The steel is rolled principally into wheel-tires for locomotive engines and railway carriages generally; also, into axles for the same, and ome portion of it into heavy plates for various ses. The works have also manufactured steel ordnance of various weights, running up to 120 centners, or five tons (the centners, Swedish weight, is about 93 lb. English: 24 centners are equal to one ton); which is not re garded as any exceptional size, &c., up to 1100 entners, or 46 tons in weight.

The total amount of steel produced at these vorks two years since (in 1871) was 97,000 centners, or 4042 tons, and the weekly manufacture at a recent date had attained an amount exceed. ing 2000 centners, or about 84 tons-that is, at the rate of an annual yield of 4500 tons.

The works are fitted up with very efficient machinery, and all suitable accessories, and they sustain a large industrial population. Among the plant there are numerous steam hammers of various sizes and kinds. The largest of these weighs 15 tons, striking with a blow of 45 tons, its impact being increased steam hammer was constructed in England, and at the time it was cast it was generally reto have been the largest ever then made, with the solitary exception of one which had been erected at the famous works of Krupp, at Essen, in Germany. The anvil-block of this 15 ton steam hammer weighs nearly 19 tons, and the foundation plates 100 tons.

The main building of the Sandviken's Iron Works is of large dimensions, having as many feet in its length as there are days in the year.

The Action of Acids upon Zinc .- At the recent meeting of the French Association scarcely be said that much radical alteration has been made upon the chief features of the pipe modding machine as first employed at montrose, but many other inventions have been worked out or adopted by Messrs. Stewart & Co., the success of which has continued to maintain the firm in question in the very fronting rank of the pipe founding trade. At this stage it is but proper to mention that the actual management of the works is, and has long been, in the hands of Mr. James Young, the mechanic whom we have already spoken of as being jointly concerned with his employer in working out the original invention to a successful issue. To that gentleman's courtesy and obliging disposition we are indebted for much of the information in this stricle.

Pipes, such as were used in the great Loch Katrine scheme for the supply of water to Glasgow, may be made by machinery up to four feet in diameter, when the length of the pipes, is always nine in the pipe in working of the metal from the pipes, which are so deep that a twelve feet pipe can be completely immersed in the actual frecision and straight. Another important condition is that the inside surface should be of equal thickness all round at the pipe itself evitindrical and straight. Another important condition is that the inside surface should be smooth and fair, so that friction maintain the firm in question in the very frontial management of the works is, and has long been, in the hands of Mr. James Young, the mechanic whom we have already spoken of as being jointly concerned with his employer in working out the original invention to a successful issue. To that gentleman's courtesy and obliging disposition we are indebted for much of the information in this stricle.

Pipes, such as were used in the great Loch Katrine scheme for the supply of water to Glasgow, may be made by machinery up to four feet in diameter, when the length of the pipes, in in the length of the pipes, which are of equal the cores all in one pleve, and of sand similar to that used in front in the for the Advancement of Science, M. Gourdon, of Lyons, described some novel facts which he

Eron.

CLEVELAND.

CLEVELAND ROLLING MILL CO.,

BESSEMER STEEL RAILS, Steel Plates and Forgings, Railroad Iron, Merchant Bar Beams, Girders, Splices, Bolts, Spikes, &c., &c. Office, Nos. 99 and 101 Water St., CLEVELAND, O. H. Chisholm, V. P. & Gen. Supt E. S. Page, Ser'y.

Cleveland, Brown & Co.

IRON AND STEEL,

HORSE SHOES, HORSE NAILS, NORWAY NAIL RODS, NAILS, SPIKES,

"Standard Taper" Axles & Swedes Iron, WINDOW GLASS,

Wrought Iron Pipe and Boiler Tubes Chains, Rivets, Nuts, Washers, and Heavy Hardware Generally. 25, 27, 29 & 31 Merwin Street,

CLEVELAND, OHIO. OLD DOMINION

Iron and Nail Works Company, RICHMOND, VA., R. E. BLANKENSHIP, Commercial Agent,

NAILS AND BAR IRON,

Sands, Scrolls, Horse Shoe Bars Nut and Rivet Iron, Spike Rods, Sharting, Bridge Boirs. it aim Half thenin, Half Roonin. &c

NEW HAVEN

New Haven, CONN



Established 1836.

Sidney Shepard & Co., BUFFALO, N. Y.

Our Specialties

For which we Invite Correspondence & Solicit Orders.

Tinmen's Tools and Machines. Ausable Horse Nails. W. D. Wood & Co.'s Sheet Iron. Patent American Russia Iron. Galvanized Sheet Iron. Snell's Augers and Bits. Snell's Boring Machines. Tubular Lanterns. Shepard's Blind Hinges. Iron Tea, Table & Basting Spoons. Turn Table Imp'd Apple Parers. l'eerless Egg Beaters. Brass Kettles. Enameled Kettles. Rubber Belting, Packing & Hose. Berea Grind Stones. Yager's Soldering Sa Cast Hollow Ware. Sheet and Bolt Copper. Copper Bottoms. Planished Copper. Yaw's Cow Bells. Tinned and Black Rivets. American Screw Co.'s Screvs. Manila Rope. Bessemer Steel Spring Wire. Barney & Berry's Skates. Novelty Clothes Wringers. Stove Boards.

Tea Trays. Chesapeake Cut Nails.

Ice Cream Freezers.

Iron Wire. Wire Dish Covers. Stove Ornaments.

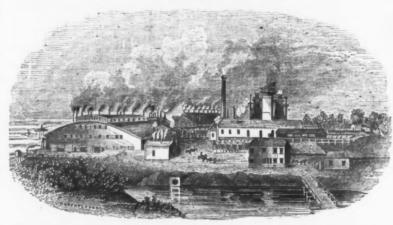
American Coffee & Spice Mills.

BIRMINGHAM, ENGLAND SAMUFL A. GODDARD & CO.,

Commission Merchants and General Agents execute or her for British manufactu as on the lowest terms, and collect and forward goods for a very monerate payment. Agents for the sale of North Staffordebire from of a standard quality.

Fron.

MILWAUKEE IRON



RAILROAD

of Unsurpassed Excellence.

Capacity of Works, 45,000 Tons or Rails per Annum.

E B. WARD, Prest. ALEX. MITCHELL, Treas. J. J. HAGERMAN, Secy. &

MILWAUKEE, WIS.

MILES ALARM TILL

The Oldest, Largest and only Incorporated Alarm Till Co. in the

World.



Catalogue,

Send for

Price List and Circulars.

Providence, R. I.

LEGGETT & LEGGETT, Patent Attorneys and Solicitors of Patents. WASHINGTON, D. C.,

Give special attention to securing American and Foreign Patents for Inventors, Reissues and Extensions of Patents; also, to the taking up and prosecuting of Rejected Cases, Interferences, Infringements, Appeals, etc

We prosecute cases before the Patent Office & in the different Courts Correspondence promptly and carefully attended to

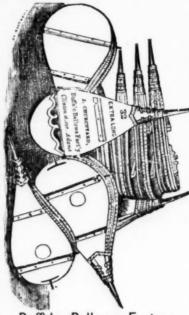
Artistic & Enduring

National Fine Art Foundry

chweitzer Mfg. Co., 57 Readn St., N. V. IMFORTERS & JOBBERS.



D. H. WHITTEMORE, Worcester, Mass.
J. Clark Wilson, & Co., New York, and Wm. H. Cole,
Baltimore, Agents.



Buffalo Bellows Factory.

MERCHANTS WILL FIND IT ADVAN-tageous to buy from me, as I sell low, and my loca ton enables me 's ship at very low rates. No charge for cartage or o're rincidental expenses, my quotation being the whole cost to the purchaser, except the freight from JOSEPH CHURCHYARD

GEO. W. BRUCE,
No. 1 Platt Street,
Continues to import

Nettlefold & Chamberlain's, IRON AND BRASS SCREWS, AND WIFE GOODS, RIVETS. &c., and easures the trade the his stock, assortment and prices are not equaled by any other parties, whatever their pretentions as w YORE, April 1st, 1st3. Fron.

CAST IRON

GAS and WATER PIPES LAMP POSTS, FIRE HYDRANTS, VALVES, &c. R. A. BRICK & CO., Mfrs., 112 Leonard St., N. Y.

NEW HAVEN ROLLING MILL CO.,

CAMDEN IRON

(Established 1824), CAMDEN, N. J.



JESSE W. STARR & SONS,

Engineers, Contractors and Manufacturers of Gas Apparatus. And all the

Buildings, Tanks, Holders, &c., required for the Manufacture, Purification, and Storag of Gas, and Street Mains Requisite for its Distribution.

Plans, Drawings, and Specifications promptly furnished.

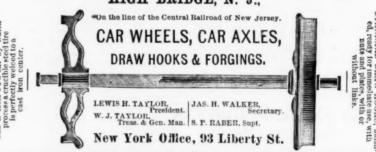
IRON FOUNDERS

CAST IRON STREET MAINS, for Water and Gas, from One and a Haif Inches to
FORTY-EIGHT Inches in Diameter,
top Valves (all sizes), FIRE HYDRANTS, HEATING PIPES, BRANCHES, BENDS, TEES

CASTINGS of any form or size required.

PHILADELPHIA OFFICE. - - 403 WALNUT STREET. IRON WORKS TAYLOR

HIGH BRIDGE, N. J.,



ATKINS BROTHERS,

PROPRIETORS OF THE

Pottsville Rolling Mills & Pioneer Furnaces Pottsville, Pennsylvania.

RAILROAD IRON

The Britannia Ironworks Company, Limited, Middlesbro' England, MANUFACTURERS OF

ALL DESCRIPTIONS OF IRON RAILS

Surplus Stocks of Various Sections always on hand. London Office: W. G. FOSSICK, 6 Laurence Pountney Hill, E. C.

Weekly Output, One Thousand Tons.

NEWCOMB BROS., Smiths', Moulders' and Hand ${f BELLOWS}.$



For further particulars send for descriptive circular and price list. 586 Water St., near Montgomery, N. Y. Canal Street, East Broadway and South Street Cars cross Montgomery St.

W. & B. DOUGLAS, MIDDLETOWN, CONN. The Oldest and Most Extensive Manufacturers of PUMPS, HYDRAULIC RAMS, GARDEN ENGINES **Hydraulic Machines** WORLD. Awarded the GRAND MEDAL of PRO-GRESS at WORLDS' EXPOSITION, VIEN-NA, 1873, being the highest awards on Pumps, &c., also, highest medal at PARIS Descriptive Catalogues and Price Lists sent when requested. BRANCH WAREHOUSES, 85 & 87 John Street, N. V.





THE LARGEST PUMP WORKS.

IN THE WORLD.

127 Lake St., CHICAGO, III.

Pumps, Steam Pumps, Rotary Pumps, Centrifugal Pumps, Piston Pumps,

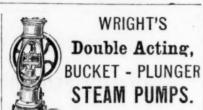
HAND FIRE ENGINES,

RUMSEY & CO.,
SENECA FALLS, N. Y., U. S. A.
LINFORTH, KELLOGG & CO., San Francisco, Cal.,
GENERAL AGENTS FOR THE PACIFIC COAST. L. M. RUMSEY & CO., Branch House, 811 N. Main Street, St. Louis, Mo.

JAMES T. MAGUIRE,

Builders' Wrought Iron Goods, HOOKS HASPS AND STAPLES, Awning Hooks, Corner Irons, Rings, Ment Hooks, Horse S. Pincers, Tongs, &c. Se' Price List.

Messrs. WM. F. SHATTUCK, & CO., 115 Manufactory, 616 E. 11th St., New York,



V ALLEY MACHINE CO., Easthampton, Mass.

ALWAYS RELIABLE



Rules, Planes, Iron Planes, Grooving Plows, Gauges, Plumbs and Levels, Hand Screws Beach Screws, Handles, Door Stops, Try Squares, Sliding T Bevels, Turning Saw I and Saws, Scholl's Patent Gauge, Butler's Patent Gauge, Boring Machines, &c., &c. Illustrated Catalogues of 1874 furnish

H. CHAPIN'S SCM, Pine Meadow, Conn.

New Patent "X" Razor Strap.

PATENTED DECEMBER 23, 1873.

This Strap, designated on our List as Letter "X," is of novel construction-is elastic, pleasantly yielding to the razor—gives a keen fine edge—is made of superior stock—is furnished at a low price—and gives universal satisfaction.

FITS PRICE SELLS IT.

BENJAMIN F. BADGER, Sole Manufacturer, Badger Place, Charlestown, Mass, has yet been invented.

Prospecting for Iron Ores.

From the annual report of the State Geolegist of New Jersey, Mr. Geo. H. Cook, a opy of which has just been received, we take the following

With the rapid increase in our yearly production of iron, and the prosperity of the mining interest, there has been a very general inquiry for new locations for mines, and an active and established mines pursue their inquiries or injudicious explorations, by inexperienced

1. The workable beds of magnetic iron ore are all in the Azorc rocks. Strong local attrac- sidered to be due to the influence of the earth. tion is not uncommonly found in the trap rocks | Magnetic iron ore is susceptible of being made of our State, and some attempts have been nade to work them, but as yet without success. through it, but has not yet been profitably eparated from the rock.

2. The magnetic iron ore is all found in beds which are interposed between the layers of the nelss and are conformable to them. It is never n veins which cut across the layers of the rock ; it has no gangue rock of cale spar, fluor spar, quartz or any other mineral different from the n minerals of the adjacent rock layers ; it has no rock walls by which the ore is reparated from the adjacent rock, which at all differ from any other two adjoining beds of rock which are separated by a seam of softer or otherwise different mineral, and in many cases there is no eam at all, but the ore adheres firmly to the rock; and there are many instances in which it passes into rock by a gradual diminution of magnetite in the mass. These beds of magnetite, like the rocks among which they occur, are highly inclined or almost vertical. In this respect they have an accidental resemblance

3. Since the layers of ore and rock stand on dge, it necessarily follows that the ore must ome to the surface of the rock. The rock surface is usually covered with loose earth and boulders, and of course this outcrop of ore is hidden from sight. But it is only necessary to emove the loose earth, in order to determine whether the ore is there. Blasting out or sinking expensive shafts in rock is not necessary, and such expense should not be incurred in ordinary explorations.

4. The direction in which the beds of ore ange is the same with the strike of the rock, and the extension of worked beds of ore is frequently proved by ranging, and many successful searches for new openings upon ore have een made in this way.

5. In ordinary cases where the surface is covred with loose earth it is common to search for ore with a magnetic needle or a miner's compass, and for preliminary examinations it is now the chief reliance. In using this instrument much practice is required; but this joined to good judgment gives indications of the presence of ore which are almost infallible. The importance of this mode of search is so great that we may describe the instruments, their indications, and the mode of using them, at some length.

Instruments,-The surveyor's compass with a norizontal needle was the instrument first used for detecting and locating beds of magnetic ore, and it may still be used for that purpose, but it s unnecessarily large and heavy, and searches hose having needles only two or three inches ong, which are without sights and so light as to be held steady in the hand, were used very generally till within the last five or six years. As indications of less than two or three degrees vere not noted, these instruments were suffiiently large, and much good work was done ith them. They may still be used to advanage, but have gone into disuse mainly because another form can be used which gives indicaions more rapidly.

The miner's compass, which is the one now balanced on a horizontal axis so that the needle itself may turn up and down instead of side wise, as in the other form of compass. Such a mode of suspen-ion constitutes it a dipping needle. The needles used are from two to four nches long and are hung in circular boxes havng brass edges and glass sides. The needle is suspended in the middle of the box, and the ox itself is held by a ring attached to its edge. The circular edge is graduated inside to derees, and these are numbered so that when the eedle is level it points to 0', and when it dips down vertically it points to 96°. The box must be held so that its faces are toward the east and west, the needle is balanced so as to be horizontal when in this position, if there is no local attraction. If the box does not face east and there is no local attraction, so that caution must always be exercised when making observations ith it. There is a Swedish compass for miners which has both horizontal and vertical motions, and is most approved there. It has not the steadiness of our instruments, however, and cannot be used with so much confidence in its indications. Messrs. W. & L. E. Gurley, of Troy, have made for me a miner's compass and having sufficient horizontal motion to prevent making mistakes in holding the compass. It is mounted in a box like the common miner's

netism of the needle may also be diminished or weakened. If the compass is out of order, the only safe way is to send it to an instrument maker for repairs.

Indications.-It is well known that if a bar of iron is held perpendicularly, it acts like a magnet; its upper end attracting the north search for new beds of ore. The owners of old and established mines pursue their inquiries lower end the south pole. If the upper end and searches with prudence and intelligence; of the bar is leaned over toward the south but a great dea! of money is wasted in useless about twenty-five degrees in this latitude, its or injudicious explorations, by inexperienced magnetic properties are developed most powerand sanguine persons, who know the value of fully, and on the contrary if the bar slants mines, but have not learned the difficulties of away from this position it shows ts magnetism finding them. The following directions to those who are looking for iron ore deposits may be east and west direction it shows no magnetism is developed simply by its position, is coninto magnets by the influence of the earth, the same as the iron bar. The beds of ore are like The ore in the trap is disseminated everywhere great flattened bars of iron which stand on end with their upper extremities slanting toward the southwest, and their lower ends extending down into the earth toward the northeast. Their upper ends which, of course, are those under the soil but nearest the surface, should attract the north end of the needle, and this they always do. If the bed of ore is broken across by an offset, or its continuity destroyed in any other way, the lower end next this break or offset should attract the south end of the needle, and this it always does if the break or offset is near enough to the surface to move the needle in any way.

Again, if a bar of iron is laid down with its ends pointing north and south, the north end will attract the south pole of the compass needle, and the south end of the bar will attract the north pole. In crossing a vein of magnetic ore from the south toward the north, the north pole of the needle is attracted during all the first part of the passage, but just at the commonly called veins. And, understanding the needle is attracted; a short distance that the word vein simply means a flattened all attraction ends, all of which is quite in accordance with the experiment with the bar of to true veins, and this has led to their being place of passing off the vein the south pole of pole is often spoken of as positive; and that which draws the south pole as negative; and in writing, these attractions are expressed by the algebraic signs, plus and minus

The indications from the magnetic needle, in searching for ore as it usually occurs in our State, may be stated as follows

An attraction which is confined to a very small spot and is lost in passing a few feet from it, is most likely to be caused by a boulder of ore, or particles of magnetite in the rock.

An attraction which continues on steadily in ward the northeast along the line of attraction, no indication as to the further continuance of

In crossing veins of ore from southeast to northwest, when the dip of the rock and ore is as usual to the southeast, positive attraction is first observed to come on gradually, as the or is nearer and nearer to the surface, and the with it go on slowly. Pocket compasses, or northwest edge of the vein is indicated by the needle suddenly showing negative attraction just at the point of passing off it. This change of attraction will be less marked, as the depth of the vein is greater, or as the strike is nearer north and south. The steadiness and continuance of the attraction is a much better indication of ore, than the strength or amount of attraction is. The ore may vary in its susceptibility to the magnetic influence from impurities in its substance; it does vary, according to the position in which it lies-that is, according to much according to its distance beneath the sur-

Method of Using the Compass in Searching for -The first examinations are made by assing over the ground with the compasin a northwest and southeast direction, at intervals of a few rods, until Indications of cre are found. Then the ground should be exam ined more carefully by crossing the line of at traction at intervals of a few feet, and marking the points upon which observations have been made, and recording the observations. In this way, materials may soon be accumulated for staking out the line of attraction, or for constructing a map for study and reference

After sufficient exploration with the magnetic needle, it still remains to prove the value of the vein by uncovering the ore, examining this way proved to be of value, regular mining operations may begin.

or where it has been subject to bends, folds, or which has the two motions, dipping perfectly in what direction to proceed, explorations may of their colors. This uniform coincidence sugbe made with the diamond drill.

During the year past the diamond drill has compass, and I have no doubt is the best that township, Morris county, in searching for ore. similar to that by which wrought iron is prohas yet been invented.

The work was under the direction of J. W. duced.

All the compasses need handling with care, Hussey, of Bloomingdale, who has kindly furthey are very delicately suspended, and can nished the following results: On the Kahart easily be broken, worn or displaced. The mag- tarm, about three miles southwest of Bloom ingdale, five holes were bored on the line of the supposed vein, and at distances thirty feet apart. The holes were vertical. In each of these the vein was found, and from the core its thickness and degree of dip were ascertained. The depths at which the ore was struck ranged from fifteen to ninety feet beneath the surface The dip was reported as fifty degrees toward the north. This unusual direction or inclination of the ore is also seen in the old mine holes on the same line on this farm.

The other line tested was two miles north-

west of the Kahart farm, and near Stony Brook, on lands of Abraham Gould. Here three vertical holes were bored, and ore found in each of them. The rock was a very hard gneiss. From at all. This magnetism in the fron bar which the experience gained here, Mr. Hussey says that in ordinary gneiss rock holes can be put down eighty feet at a cost of \$3 per foot, and fifty feet at \$2 per foot, provided there is an adequate supply of water near, for running the drill. From these results, and from the successful employment of the drill in testing the extent of iron ore beds on Lake Champlain, New York, and Cornwall, Pa., and in boring for coal in the latter State, it can be safely recommended as not only cheaper, but also much quicker, especially when the examinations are to be at all deep. Near Pottsville, Pa., the drill has been employed to hore several holes preparatory to sinking shafts. Several contiguous holes were bored and then filled with sand quite to the top, This was removed in lengths for a cartridge of nitro-glycerine, which, exploding, tore up the rock about the size of the shaft. The core brought up by the drill shows the character and thickness of the successive beds pierced, as also the amount of the dip, but not the direction. Wherever a great thickness of rock lying ver a supposed vein is to be penetrated, this is the cheapest and quickest mode of determining the extent and character of the ore. And in case of some of our larger mining companies, such

> falsely conservative plans now followed. At two other points the use of this drill had been decided upon, but the financial difficulties so severely felt by iron mining companies prevented the trial.

an examination of property might develop large extent of ore, justifying machinery and

modes of working commensurate with the amount of work before them. In some instan-

ces this would be more economical than the

The subject is earnestly and urgently commended to all our iron mine superintendents, and to capitalists or others connected with mining or prospecting for ore.

Searching for hematite ores cannot be done with the miner's compass. The ore does not affect the magnetic needle. All the deposits of this ore yet known in New Jersey have the direction of the strike of the rock for a been found in or near the magnesian distance of many feet or rods, indicates a vein limestones. Nearly all have been found of ore; and if it is positive and strongest to- at the meeting of the limestone and the ward the southwest, it is reasonable to conclude gneiss rock, though a little has been seen that the vein begins with the attraction there; near the meeting of the limestone and the if the attraction diminishes in going northeast, slate. To search for this ore, the first requisite and finally dies out without becoming negative, is to be familiar with its appearance, so as to it indicates that the vein has continued on recognize it even in very small fragments. The without break or ending until too far off to next point to be attended to is the geographical move the compass needle. If, on passing to- position of the magnesian limestone. This is accurately laid down upon the map accompanythe south pole is drawn down, it indicates the ing the present report. A careful examination end of the vein or an offset. If, on continuing of the surface of the ground where hematite farther still in the same direction, positive at- exists, will detect fragments of the ore among traction is found, it shows that the vein is not the little stones and gravels that may be exended; but if no attraction is shown, there is posed; and, in some cases, pieces of the ore weighing many pounds are found loose upon the surface. Very full directions for sinking trial pits in the search for hematite, were given in the Geological Report for 1872, and the reader is referred to that for particulars

The Magnetic Metals.

It is well known that, beside iron, there are few other metals possessing magnetic properties, viz., nickel and cobalt in a strong degree; manganese and chromium in a feebler one. In the Philosophical Magazine we find a remarkable article on this subject by Mr. W. F. Barrett, F. C. S., in which he endeavors to point out the similarity of these metals to each o'her in their physical and chemical properties. Thus, as to specific gravity, that of the thirty-eight its dip and strike; and it also varies very known metals range from lithium 0.50 to platium 21.5, a difference of nearly 21; w those of the three strongly magnetic ones are. iron, 7.8; mckel, 8.3; cobalt, 8.5, where the extreme difference is only 0.7. Their specific heat is nearly identical, their atomatic one is the same, so, also, their conduct vity for sound, heat and electricity. Their dilation by caloric and the amount they lengthen by mechanical train are also identical. The enormous cohe ive power of iron, nickel and cobalt in the solid state signalizes these substances as the most tenscious of metals, and their melting point is only exceeded by the platinum group of metals. They are not volatile at the temperature of the hottest furnace, but only by the electric spark, when they yield very similar spectra. As to their chemical properties, the combining weight of iron is 56.0; nickel 58.5, and cobalt west the needle will not be horizontal even if its quality, measuring the size of the vem, and the same. Chemists class these three metals estimating the cost of mining and marketing in the same group from the similarity of their it. Uncovering should first be done in trenches chemical behavior, and also the identity of dug across the line of attraction, and carried their combining energy or atomidity. What quite down to the rock. When the ore is in has been said concerning the likeness of iron, nickel and cobalt in many respects holds true of manganese and chromium. The former has In places where there are offsets in the ore, latterly been used to replace nickel in the alloy of German Silver. The compounds of all these other irregularities, so that the miner is at fault five metals are conspicuous for the brilliancy gests the practical inference that nickel and cobalt might be obtained in a malleable and been employed at two points in Pequannock ductile condition when submitted to a process

NICHOLSON FILE.

All Nicholson Files are cut with the Patent Increment Cut, an invention owned and controlled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly expanding or increasing in size and space TROY WRO'T BUTT CO.S Wrought Iron Butts (Riveted Pin). from the point, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at least) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equi- E. F. HURD'S AXES, HATCHETS, ADZES, &c., &c. distant, the hole reamed will not be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of Increment Cut File, which possesses all the advantages of hand cut work, and the accuracy and uniformity of machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "Increment File" is not an experiment, but an established fact, and already has acquired a legitimate demand for upwards of 500 dozen per day. We employ no regular Travelers, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

Prices and terms will be forwarded on application to

NICHOLSON FILE COMPANY, Providence, R. I.

1868.

1844. 1850. 1816. H. F. F. & SON. H. F. F.

P. A. F. & CO P. A. F.

PETER A. FRASSE & CO.,

95 Fulton Street, New York,

Stubs' Steel Wire, Files and Tools, FLINT AND EMERY Grobet Swiss Files,

Extra Quality English Spring Steel Wire, Nos. 1 to 34.

Steel Wire for Sewing Machine Needles and for other Purposes, French Cold Rolled Sheet Steel,

Sizes, 22 to 36 Gauge. Jewelers', Engravers' & Mechanics' Tools. The on.y Agents in the United States for

> HUBERT'S CELEBRATED FRENCH EMERY PAPER. For Hatters' and Machinists' Use.

Black Diamond File Works.



G. & H. BARNETT.

39 41 & 43 Richmond St. Phila

FILES AND

XTRA QUALITY,

MADE FROM THE BEST

IMPORTED STEEL

Auburn File Works, AUBURN, N. Y.

LLOYD, SUPPLEE & WALTON, WHOLESALE

HARDWARE HOUSE,

HARDWARE FACTORS.

BATES' MANUFACTURING CO.'S GOODS.

Bonney's Pat. Hollow Augers & Spoke Trimmers.

Bonney's Patent Double-Edged Spoke Shave. Bonney's Patent Adjustable Gate Hinge.

Bonney's Patent Sash-Fast and Lamp Bracket.

625 Market Street, PHILADELPHIA.



PAPER,

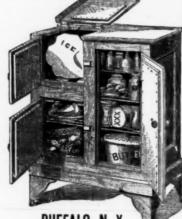
Flint & Fmery Cloth.

113 Chambers Street,

P. O. Box 3502. NEW YORK CITY

ESTABLISHED IN 1849. JEWETT'S BUFFALO

JOHN C. JEWETT & SONS, Manufacturers.



BUFFALO, N. Y.

Chain.

CAIN, GORDON & CO., Union Chain & Anchor Works. 1845 Richmond Street.

office S. W. cor. Queen & Swanson Sts. "Ooo" PHILADELPHIA.

American Chain Cable Works, 28 Years' Experience in the Bu

KENDRICK & RUNKLE, Trenton, N. J. Manufacturers of Cable, Crane, Coal Mine Slope, Car Brake Chains, Traces, Breast, Binding, Cow and Log Chains of all kinds.

N. B.—The highest grades of Crane Chains a specialty.

New England Chain Works

Mowing Machine, Crane, Break, Draft Chains, &c., &c. Also. Latest Improved Cotton Can Bings. THUS. WIATT, Proprietor.

ANE, GALE &

THE EAGLE SQUARE CO.'S Steel and Iron Squares.

G. T. LANE'S PLANTERS' HOES.

AGENTS FOR

BURDEN'S HORSE and MULE SHOES.

E. W. GILMORE'S STRAP and T HINGES.

SCOVIL MFG. CO.'S BRASS BUTTS. J. M. KING'S STOCKS & DIES.

McCREA'S SHOE THREADS and TWINES.

G. F. ELLS' CURRY, CATTLE and PLANTATION CARDS. ENAMELED and TIN WARE, &c., &c., &c.

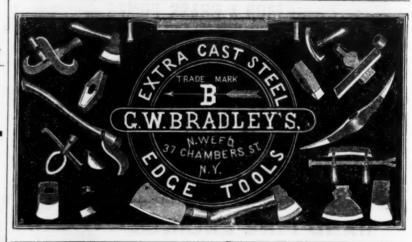
TROY, N. Y.

PENNSYLVANIA FILE WORKS.



McCAFFREY & BROTHER,

Manufacturers of FIRST QUALITY FILES and RASPS ONLY, Nos. 1732 & 1734 North Fourth Street, Philadelphia, Pa.



FERNALD & SISE,

100 Chambers Street, NEW YORK. HARDWARE MANUFACTURERS' AGENTS,

Reading Hardware Co. Reading Hardware Co Crooke & Co. Yerkes & Plumb. Hartje, Wiley & Co. Vulcan Horse Nail Co. Walsh & Bro. Moran & Sons.

Barnes & Deitz. Nashua Lock Co. Arcado Filo Works. William McNiece. Langstroth & Crane. A. E. Young.

Underhill Edge Tool Co. Plumb, Burdict & Barnard. Hotchkiss, Tuttle & Co. Klein. Logan & Co. T. T. Rhodes. one Manufacturing Co. Orleans Scytle Stone Co. Young. Jakin Manufacturing Co

TURNER, SEYMOUR & JUDDS. MANUFACTURERS, IMPORTERS AND DEALERS IN

Hardware and Upholsterers' Brass Googs,

1. L. Davis' Patent Levels, Stevens' Calipers and Dividers. Page's Auxiliary Jaws.

Manufacturers of Judds', Prindle's and Combination Patent Curtain Fixtures, Locks and Curtas Patent Raisin Seeder, Patent Twine Boxes, Picture Nails and Hooks, Escutcheon Pins, Coat and Hat Hooks; also Miscellaneous Iron and Brass Goods.

Small Brass and Iron Castings made to order. 64 Duane Street, NEW YORK.

JAMES C. HAND & CO. COMMISSION MERCHANTS.

No. 614 & 616 Market Street,

PHILADELPHIA

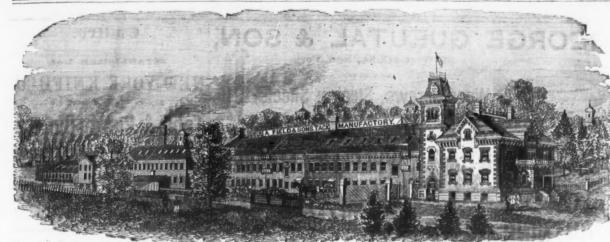
ACENTS FOR:

William Penn, Reading and Norristown Pig Iron.
Reading Iron Co.'s (Crescent Brand) Nails, Boiler Flues. Bar Iron, Plow Steel and Iron, South Easton Iron Wire. Wm. Jessop & Sons' Steel and Norway Nail Rods.

Barrows, Savery & Co.'s Hollow Ware. Castings, &c.
Fisher & Norris' "Eagle" Anvils and Vises,
Washington Mills Emery. Heavy Hardware, &c., &c.

MANUFACTURERS OF AMERICAN HARDWARE.

Coes & Taft's Pat. Wronches. Mouse Traps. Wire Selves. A Ke, Pick, Siedge & Hammer Scale Brams. A Ke, Pick, Siedge & Hammer Scale Brams. Patent Tap Borers. Handles, Hatchets, Auger, Chisel & File Tool Clests. Climax Horse Collars. Brundage Horse Nails, Glimets and climite Hits, Haguire's Wr't Iron Goods. Caffee Mills. Shattuck's Pistferm Counter Seales, Scales, Sc



D& SONS,

TAUNTON, MASS., Manufacturers of

Copper and Iron Tacks, Tinned Tacks,

SUPERIOR SWEDES IRON TACKS, for Upholsterers' Use, Saddlers' Supply, Card Clothing, etc., etc.

American and Swedes Iron Shoe Nails,

Zinc and teel Shoe Nails, Carpet, Brush and Cimp Tacks, Common and Paten: Brads, Finishing Nails, Annealed Trunk and Clout Nails, Hob and Hungarian Nails,

Copper and Iron Boat Nails, Patent Copper Plated Tacks and Nails Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails, Leathered Carnet Tacks, Glaziers' Points, etc., etc.

OFFICES AND FACTORIES AT TAUNTON, MASS.

WAREHOUSE AT 35 CHAMBERS STREET, NEW YORK, where may be found a full assortment of Tacks, Brads, &c. for the accommodation of the New York Wholesale and Jobbing Trade.

3. Any variations from the regular size or shape of the above named goods made from samples, to order.



Washoe Tool Mfg. Co.,

Celebrated Washoe Railroad and Mining Picks,

MATTOCKS, HATCHETS AND OTHER ADZE EYE TOOLS.



Having doubled their Manufacturing facilities, they can now fill orders

All orders should be addressed to their?

SOLE AGENTS

Messrs. Hogan, Clark & Sleeper,

82 Chambers St., N. Y., or 105 Broad St., Boston, Where Catalogues and Discounts can be had on application.

H. H. TRENOR, Treas.

JOHN MAXHEIMER,



NEW YORK.

RIEHLE BROTHERS,



"Patented Furnace Charging Scale." Double Beam R. R. Track Scale, Com-ound Parallel Crane Beams, &c. Patented irst Power Lever Wagon Scales. Testing Machines any capacity.

> DEMAREST, JOYCE & CO., Iron Founders, MACHINISTS.

FOUNDRY Sewing Machines, Steam Fittings,

H LIGHT WORK of all kinds. ALSO

Plain and Ornamental Japanning.

20 to 30 Morton, and 57 to 65 Clymer Streets, BROOKLYN, E. D., N. Y.



price from \$60 to \$200. POWER BOLT CUTTERS, from \$175 to \$350

FINE FRICTION CLUTCHES WILEY & RUSSELL, Greenfield, Mass.

"GILL'S" CAST STEEL PATENT CLUTCH DRILL, GEORGE W. GILL, 27 North 5th St., Phila.

Something New for

FURNACES & MINES. New Union Steam Safety Elevator,

How One Works.

RIVERSIDE IRON WORKS, DEWEY, VANCE & Co., Wheeling, W. Va., January 14th, 1873.

Messis. Otis Brothers & Co., New York.

Dear Sirs: The experience of a year proves that your Furnace Elevator is superior to all others in use. We have in the six weeks from December 1st to Sunday last, 12th Inst., made 2724 tons, 1401 lbs. Pig Metal, or an average of near 65 tons per day, which required the elevator to life 72 teet high 4½ tons Ore, Coke and Limestone for each ton of metal produced, or more than 11,500 tons material in the 6 weeks. The largest yield in one day was 81 1-4 tons Iron, involving the lifting of 345 tons material in 24 hours. This has all been done to our satisfaction, and that, too, in the coldest weather we have had. Other furnaces with water and pneumatic hoists have experienced great difficulty, on account of the water freezing in the tanks; and in the case of the air hoists we understand that two furnaces, not far from us, had to "blow out." from being unable to hoist stock during the "cold snap." The difficulty, we are told, was caused by the condensed ministure in the blast freezing to the sides of the criticalers, so that the piston could not move up or down.

Very truly, yours,

Dewer, Vane & Co. Mesers. OTIS BROTHERS & Co., New York.

for Circular tot

OTIS BROTHERS & CO.

348 Broadway, NEW YORK.

BUSINESS ITEMS.

PENNSYLVANIA.

The Bristol Rolling Mill, which has been topped for some time, is about to resum-

It is stated that the Allentown Rolling Mill Company has a contract for 7000 tons of rails or the Eastern and Amboy Railroad.

The Dickson Manufacturing Company, of cranton, has restored the 10 per cent. taken rom the wages of employees last fall.

It is reported that a machine shop and founlry will soon be erected at West Elizabeth, near littsburgh.

The organizing of a company for creeting ew rolling mill in McKeesport is talked of.

There are nine double furnaces in the rolling ill of the Harrisburg Nail Works, at Fairview A pair of tubine water wheels are used to run the muck train. In the plate mill are three heating furnaces and 73 nail machines, the ca pacity being about 3000 kegs per week.

NEW JERSEY. The Danforth Locomotive Works, at Pater on, have about 400 men at work, and have commenced to run full time. They are working on an order for the Baltimore and Ohio Railroad.

A fireless locomotive was tested in Paterson March 20, and worked very successfully, drawng two cars loaded with passengers at a fair rate of speed. The boiler was charged before darting with sufficient steam to run 12 miles. The machine is intended for use on the Sixth Avenue Railroad, in this city.

The Grant Locomotive Works, at Paterson ow employ about 500 men. They are at work on an order for the Chicago and Northwestern Railroad, and have, it is stated, orders enough to keep the shops full for some time.

MASSACHUSETTS. The workshops of the Tucker Manufacturing ompany, in the Massachusetts penitentiary, at Charlestown, were destroyed by fire, March 21, with their contents. The State loses \$50,000 on the building, and the Tucker Manufacturing Company lose \$200,000 on gas fixtures, bronzed goods, etc. The fire is believed to have been ecidental.

It is stated that the production of guns at the pringfield Armory is to be reduced after the 1st of July from 200 to 100 daily, and perhaps still lower. This will necessitate the discharge of a arge number of workmen.

CONNECTICUT.

The works of the Howe Sewing Machine Co., at Bridgeport, will resume running ten hours a lay April 1.

The Higganum Manufacturing Company ar receiving a large amount of iron by rail, and sending off a corresponding amount in castings and various kinds of agricultural implements to New York, the West, England, South Africa and South America.

The Rock Manufacturing Company, of Rock ville, has purchased the two mills and other property of the Leeds Manufacturing Company Forty years ago these two concerns were oper ated as one, and now they are again united.

The Cleveland Rolling Mill Company's works it Newburg, which have been idle for several weeks, on account of repairs, have again reumed operations, with the exception of the rail mill. In the sheet department billets and slabs are being manufactured for Bessemer rails. One of the blast furnaces has been idle for some time, and the other, in consequence of a strike mong the employees, has been obliged to bank. Gaeckley & Krieger, Cleveland, manufacture ngines, machinery for grist and saw mills, tanneries, breweries, distilleries, etc. They have been established 12 years, occupy one large twostory building, 50x70 feet, and employ eighteen

Mears, Olhaber & Co., of Ironton, are turning out of their foundry 300 stoves per week, beside hollow ware. This factory is one of the first crected in that city, having been established soon after the incorporation of the village, in

The rolling mill at Marietta has partly com nenced operations, and the whole establishment will soon be actively employed.

An ingenious machine for tapping fittings is now being manufactured at the works of Messrs. Stackwell, Griffin & Co., at Ravenna. It is easily operated, works automatically, and requires but one man or boy to pick up the fittings and put them into the machine. It is reported that an extensive Chicago firm propose buying the ex-clusive right to the machine. The company are This is the only Friction Clutch Drill ever invented, and has superior advantages over all other Drills.

It is the cheapest Drill in the market.
2nd. The slightest motion of the Lever gives motion to the Drill.
3rd. The head or disk can be moved from end to end of the spindle, thereby being able to clear obstructions with which the Lever may come in contact.

4th. The body is made of Cars Steel, hardened, and has a Pipe-Lever screwed in same.
5th. The strain is equally divided around the spindle, and not pulling with all the strain on one side of the center, as in the case of other Drills. Send for Circular and Price List.

**Catensive Chicago firm propose buying the exclusive right to the machine. The company are now engaged in building four new machine for Messrs. Worswick & Lewis, of Cleveland. The machine is the invention of Mr. Stackwell, of the above firm, and the company expect to have an extensive chicago firm propose buying the exclusive right to the machine. The company are now engaged in building four new machine. The machine is the invention of Mr. Stackwell, of the above firm, and the company expect to have an extensive chicago firm propose buying the exclusive right to the machine. The company are now engaged in building four new machine. The machine is the invention of Mr. Stackwell, of the above firm, and the company expect to have an extensive Chicago firm propose buying the exclusive right to the machine. for Messrs. Worswick & Lewis, of Cleveland.
The machine is the invention of Mr. Stackwell, of the above frm, and the company expect to by the parties interested."

fully ask the mill owners and operatives to submit the question of differences between them to a Board of Arbitrators, to be mutually selected by the parties interested."

Hopgood & Co.'s plow works, at St. Louis, were destroyed by fire on Saturday night, March 21. Loss \$45,000; insurance \$19,500, as New York, \$3100 each; Orient, \$1650; Germania, \$6100, and North America, \$2450. The and Pacific Railroad Company, burned on Friday night, was \$100,000.

pany, of St. Louis, filed its articles of incorporation at Jefferson City on the 11th ult. The

Roebling, years ago, cost \$100,000, and rise 365 feet above low water. Nine bids have been made to construct the bridge, eight for the truss plan and one for a suspension bridge, as originally contemplated.

The Licking Mill, at Newport, has been purchased by Taphorn, Geer & Co., a new firm.

The Labor Problem at Ironton, Ohio.

The following is the report of the Committee of the Ironton Board of Trade, appointed to inquire into the cause of the difficulties between the employers and employees in the mills:

the employers and employees in the mills:

To the Board of Trade of the City of Ironton:
The undersigned, a committee appointed in
obedience to a resolution passed at a former
meeting of the Board of Trade to inquire into
and report the cause of the existing differences
between the iron mill owners of this city and a
part of the operatives, which has produced a
suspension of work for some months past, respectfully submit the following report, in which
report they adopt the respective statements
kindly furnished by the mill owners and operatives, as follows:

report they adopt the respective statements kindly furnished by the mill owners and operatives, as follows:

To the Honorable Committee of the Board of Trade of Ironton: GENTLEMEN—In compliance with your request, we respectfully submit the following statement showing why our works have been idle for several months past.

Finding, in the fall of 1873, we were losing money by being compelled to meet Pittsburgh in selling the Iron we made, and knowing it was impossible for us to keep our works in motion, unless we could do so upon the same rates of wages Pittsburgh paid, we were compelled to ask our skilled workmen in the finishing department to adopt the Pittsburgh prices, which they declined to accept. We have, therefore, been compelled to keep our mills idle ever since. [Signed] LAWRENCE IRON WORKS,

By C. ELLISON, President.

LRON & STEEL CO.,

By ROBT. SCOTT, President.

To the Honorable Committee of the Board of

To the Honorable Committee of the Board of Trade of Ironton: Gentlemen—In compliance with your request we submit the following as our reasons for not accepting the proposition made to us by the manufacturers to work at Pittsburgh prices.

We claim that the same amount of iron which can be made in Pittsburgh with ten hours' labor, will require 12 hours in Ironton. The difference in labor is caused by the difference in the coal used.

A heater, working Pittsburgh coal, will clean A heater, working Pittsburgh coal, will clean his grate once each day, while the heaters working Ironton coal clean their grates nine times each day. We claim that a heater working in Pittsburgh can make as much money at their prices as a heater in Ironton can at the old prices, from the fact that he can produce more iron there than he can in the Ironton mills. We claim that a given amount of labor is worth as much in Ironton as in Pittsburgh, and, as workmen can produce a ton of iron in Pittsburgh with less labor than in Ironton, it should command a greater price per ton than the same

command a greater price per fon than the sam product commands in Pittsburgh. FOR THE SKILLED WORKMEN, [Signed] By Geo. B. Davis.

[Signed] By GEO. B. DAVIS.

So far as your committee have been able to ascertain, it is not claimed on the part of the rollers that it requires any more labor to roll a ton in Ironton than it does in Pittsburgh, but they claim that they are entitled to more pay in Ironton, for the reason that it takes more time, as they are compelled to wait on the heaters. Your committee further state, that, at present prices of iron in the market, it is claimed, on the part of the proprietors, that at the prices heretofore pand by them to heaters and rollers, the production of a ton of iron at their raills would cost four dollars and forty cents more than it costs to produce a ton at Pittsburgh, at the present prices paid there by the manufacturers, and that consequently they cannot nacet Pittsburgh manufactures in the same market until they can produce iron at the same prices, as they claim they have no advantage over Pittsburgh as regards freights, or in point of location.

And, on the other hand, it is claimed on the part of the operatives, that it requires two hours more work to produce the same amount of iron per day in Ironton than it does in Pittsburgh.

The proprietors admit that heretofore the coal furnished by them was not screened as it ought

more work to produce the same amount of fron per day in Ironton than it does in Pittsburgh.

The proprietors admit that heretofore the coal furnished by them was not screened as it ought to have been, but your committee, however, are informed that they have provided 1½ screens, and made other preparations to furnish clean coal, which they claim will obviate the objection by the heaters.

If the foregoing points of difference are not well taken, your committee cannot see how the matter in dispute can be settled, unless there are local advantages and disadvantages which might be fairly adjusted so as to reconcile the difference, and enable our mills to compete with Pittsburgh manufacturers on equal terms, at the same time do justice to their operatives.

Your committee take pleasure in saying that they were met by both the mill owners and workmen in a spirit of kindness and courtesy, each showing a disposition to furnish all the information necessary to enable your committee to present a fair and candid statement of existing differences to the public.

All of which is respectfully submitted.

E. Bixpx.

ELIAS NIGH, E. BIXBY, E. MCMILLIN.

This report was adopted, with the request that it be published in the Ironton papers.

Mr. McCarthy offered the following resolu-

" Resolved, That this Board of Trade respect-

A Novelty in Cheap Transportation .-A new idea in the way of cheap transportation is

projected by a writer in the Chicago Tribune. Briefly stated, "it proposes to carry grain from follows: Franklin, North British, Home of the West to New York by means of a wire cable, to which would be attached bins five feet long and capable of holding two bushels each. At insurance on the machine shops of the Atlantic distances of ten miles would be stationed engines of 150 horse power, to be used in working the endless cable, the operation of which would The Henrietta Mining and Smelting Com- be precisely like that of an ordinary elevator, except that it would carry its load horizontally instead of lifting it. The inventor thinks that ncorporators are Wm. F. DeCardova, Geo. M. by this process wheat can be moved from Edgerton and John D. Stevenson. The busi- Chicago to New York at a cost of about ten ness of the company is to be carried on in cents per bushel, after leaving a margin for Washington, Crawford and St. Louis counties. Capital, \$300,000.

The St. Louis Bolt and Iron Company's mill is running on double turn.

KENTUCKY.

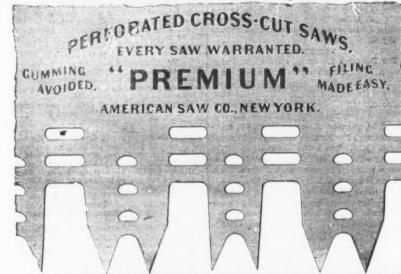
The Lexington Herald says: The bridge over the Kentucky River, on the Southern Railroad, will be the highest on the continent. It is 275 feet above low water, and has a span of 1236 feet. The towers, efected by John A. repairs and interest on cost of construction. The objection is that the cable would be required to bear a strain several times greater than its strength, and the plan as proposed would therefore be a failure. The proposal brings to mind the fact that before the success of locomotives on railroads was an accomplished fact, and even at the time when the first railroad where they were ever used was being made, it was expected that the trains would be drawn by endless cables, worked by stationary englines."

H. W. PEACE,

OF SAWS ALL

AMERICAN SAW CO..

No. I FERRY STREET, NEW YORK.



Solid saws require frequent gumming, thereby subjecting them to risk of springing or breaking. This especially the case with cross cuts having Patent Teeth. In the perforated saws all gumming is erd, and the teeth are easily kept long and in proper shape, saving files, labor, expense and verational known, our saws cut faster, smoother and easier than any other.

MOVABLE-TOOTHED CIRCULAR SAWS AND SOLID SAWS OF ALL KINDS.

Hankins' Elliptic Forked Saw Frame.

I atented June 98th, 1870. Thea 1 .. exed engraving represents HANKINS

ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any centre bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE **VULCAN SAW WORKS,** WILLIAMSBURGH, N. Y

J. FLINT & CO Manufacturers of all kinds of SAWS and PLASTERING TROWELS.

ROCHESTER, N. Y.

Dietrich's Patent Wood Saw. Guaranteed the strongest, lightest, easlest to strain or tighten and best braced wood saw made;

also to give perfect satisfaction Dietrich's Patent Double Handle Rip Saw. All will readily see the benefit of this useful invention. J. Flint's Patent Plastering Trowels. The best mide and finished Trowels in the world. We make four grades of Plastering Trowels, from the best to the cheapest.

Our patent method of grinding hand saws makes them superior to an" in the market. Send for Illustrated Price List.

YALE LOCK MFG. CO.

Office and Works at STAMFORD, CONN., Salesroom 298 Broadway, N. Y.

In addition to their line of Celebrated Locks, would particularly call the attention of the Hardwa trade to their extensive manufacture of

ORNAMENTAL REAL BRONZE HARDWARE, 1

Illustrated Catalogues of which will be furnished on application. These goods are equal to the best in the market, while their prices are very favorable.



GEORGE GUEUTAL & SON,

39 West 4th St., New York.

Wood Screws, Steel in Sheets,

BAND SAWS, TOOLS FOR BRAZING, &c. Bed Screws, Pin Hinges, and Wire Nails a Specialty.

E. M. BOYNTON,

80 Beekman St., N. V.

Manufacturer of



A Challenge of \$500, toward expense of a public test, to prove that the Lightning Saws excel all others in Speed, Ease, and Simplicity, has been offered since 17th, and the same of the s

A, B, C, represents a c o m m o n d r ag s a w tooth for cutting in one direction on-

V cutting tooth E, of same space. B.C. is equal its direct action, to both faces of V tooth, and is equal consequent to both cut-ting edges of B, C, doubled doubling the cut of the tooth A, B, C, or the tooth E, without loss



This is produced by dressing the two points of my M tooth, to cut in line so that the outside B, C, has four times the space of the slant edge behind it, or from 1 to 5, while slant has space from 1 to 2, the inefficient slant edges are thus practically concealed and do but slight surface cutting, while B, C, edges cut and clear simultaneously. taneously.

For Catalogue and additional information ad-

E. M. BOYNTON, 80 Beekman Street, New York,

E. M. BOYNTON.

80 Beekman Street, New York, SOLE AGENT.



I make a specialty of the LARGEST SIZES of Circular Sawa, and call particular attention of lum-ber manufacturers to the following points of seclience: Evenness of Temper,—The peculiar structure of my furnace subjects all parts of the saw to a DEAD heat, and when dipped in the oil bath secures porfect uniformity.

ormity,
refrect Accuracy in Thickness.—My, saws
ground on a patent machine, automatic in_tix
ation, gridding off the thick piaces upon one
before the thinner parts are reached, and when
saw is removed BALANCES PERFECTLY, which
oof positive of the right accomplishment of the

ra.

*roperty Hammered.—Great care is taken that saw shall leave my works without due attention this important particular. A saw too tightly sined upon the rim, or too loose in the center, not be successfully run.—hence the importance oprietor and manufacturer of the cele enge" Cross-Cut Saw. Price List we sent on application.

JAMES OHLEN.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phils

A. PARDEE & CO., 303 Walnut St.,

PHILADELPHIA'

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves, and firms connected with us, viz.

CRANBERRY, SUGAR LOAF A. Pardee & Co.

G. B. Markle & Co. HIGHLAND.

Pardee, Bro. & Co. LATTIMER. OFFICES:

WM. LILLY Mauch Chunk, Pa. WM. MERSHON, Agent, 111 Broadway N.Y WM. H. DAVIS, Agent, Easton Pa.

WHEELER, MADDEN å

CLEMSON,

of every description, including

Circular, Shingle, Cross Cut, Mill, Hand, Roberts' and other Wood Saws, &c., &c

Cast Steel Files

Wheeler, Madden & Clemson. FACTORIES:

Middletown, Orange Co., N. Y. BRANCH OFFICE:

97 Chambers Street, New York.

BRUNDAGE FORGED HORSE NAILS,

BEST NORWAY IRON, by BRUNDAGE & CO. Sold by WHEELER, MADDEN & CLEMSON Middletown, Orange Co., N. Y.

W. ROSE & BROTHERS

WEST PHILADELPHIA, Manufacturers of

Plasterers' and Brick Trowels

Hammers and Chisels. ALSO,

Saddlers' Round Knives etc., N. E. cor. 36th & Filbert Sts. Please send for Price List,

WM. McNIECE,

515 Cherry St., Philadelphia. Manufacturer of

Extra Cast Steel Saws of every description Pat. Screw Socket Pole Pruning Saws, Patent Screw Socket Edging Knives, Patent Screw Socket Scuffle Hoes, and

Patent Screw Socket Paper Hangers' Scrapers, Mowing Machine Sections of all patterns constantly on hand.

E. C. ATKINS & CO., Indianapolis, Indiana,

Saw Manufacturers.

Best Cast Steel Patent Ground Saws

CROSS-CUT SAW HANDLE. Best Patent Handle in use ory and Office-Nos. 210 212, 214 an

216 South Illinois Street. MYERS MFG. CO., 209 Centre Street, N. Y.

Manufacturers of FLUTING MACHINES,

Stand Sad Irons, Polishing Irons, Toilet Irons, Towel Racks, &c.

GENEVA HAND FLUTER

Cutlery.

ESTABLISHED 1852.

NEW YORK KNIFE CO.

Table & Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST MATERIAL.

WALKILL RIVER WORKS.

Walden, Orange Co., New York. THOS. J. BRADLEY, President.



Wood's Hot Water-Proof Table Cutlery

19 M III Handsomest, Cheapest, most Durable Cutlery in use. Wood's Celebrated Shoe Knives. Butcher Knives a specialty.

WOODS CUTLERY CO., Antrim, N. H.

No. 99 Chambers Street, N. Y.

A. TILLMES & CO.,

AUGUST TILLMES. 521 Commerce St., Philadelphia.

Wholesale Cutlers. Sole Agents for Wm. Clauberg's Warran Knives, Razors

Scissors, &c. SPECIALTIES:

Full Concaved Razors, Wostenholm's Pocket Karives, Razor Hones, Russia Leather Razor Straps. Wade & Butcher's Razors, and Cutlery in general.

WILLIAM A. CARLYLE,

Celebrated XL all Cutlery. Agent for LUKE OATES & CO., Sheffield.

50 Cortlandt Street, one door west of Green wich Street, New York.

Excelsior Saw Works. VAN WART, SON & CO.

Hardware Commission Merchants, BIRMINGHAM, - ENGLAND,

VAN WART & McCOY,

43 Chambers Street, New York. George H. Gray & Danforth,

48 India Street, Boston.

F. W. TILTON, 17 Old Levee Street, New Orleans. At each of these places a complete assortment of sames of Hardware and Fancy Goods will be found, in-uding all new descriptions. Sole Agents for John Rimmer & Son's Celebrated Harness and other Needles.

OSCAR IRVING VAN WART & Co., FORWARDING AGENTS, 2 South John Street, LIVERPOOL

SCHOLEFIELD, GOODMAN & SON,

(Formerly JOSHUA SCHOLEFIELD & SONS.) GENERAL

Hardware Merchants, BIRMINGHAM, - ENGLAND.

Agents and Sample Rooms New York-Edward Frith, 16 Cliff Street. Boston-H. L. Richards, 18 Batterymarch,

Street. New Orleans-R. Rhodes, 71 Camp Street. Montreal-J. J. Evans 14 St., John Street.



If your Hardware Dealers do not have for sale send for circulars.

Cutlery.

Landers, Frary & Clark,

TABLE CUTLE

General Hardware,

298 BROADWAY, N. Y.

PETERS BROTHERS.

AWARDED THE MEDAL OF MERIT.

American, German, English

Pen, Pocket & Combination Knives.

Scissors, Scissor Cases, Razors, Hones, Strops, &c.,

Heinisch Tailor Shears, &c., 88 Chambers Street, New York.



66 & 68 READE STREET (near Broadway), NEW YORK

Manufactory, SHEFFIELD, ENGLAND.

Isaac Milner's Fine Pocket and Table Cutlery. Howard Bro.'s Medium Pocket Cutlery. J. B. Osberton & Co.'s Medium Table Cutlery. Isaac Milner's Razors, Butcher and Hunting Knives. Hargreaves, Smith & Co.'s "Imperial" Files.
Milner's "\darkap" and Collins' "IXL" Hand Saws.

ROWE & POST,

Shears, Trimmers, Scissors, &c.

No. 120 Chambers and 50 Warren Streets, NEW YORK. J. Rowe's XL. Ætna Shear Co.

FRIEDMANN & LAUTERJUNG.

Pen and Pocket Cutlery, Solid Steel Scissors, F. & L. Shears, Razors, Russia Leather Strops, Oil and Water Hones, &c.

Sole Proprietors of the renowned full concaved patent

"ELECTRIC RAZORS."

Also Agents for the BENCALL RAZORS. American Table Cutlery, Butcher Knives, &c.

14 Warren Street, NEW YORK. '423 N. Fifth Street, ST. LOUIS, MO.

THE MILLER BROTHERS CUTLERY CO., PATENT FINE PEN & POCKET CUTLERY

WEST MERIDEN, CONN.

made that are put together in such a manner that there is

mife. We warrant our knives equal in cutting qualities and

yed by English makers as the Bost American Knife.

NICKEL & SILVER PLATED POCKET KNIVES hich will not rust or become discolored when used as a Fruit Knife, and their cutting qualities are equal any other knife. Orders filled from the fastory or by J. CLARK WILSON & CO., 81 Beekmap Street, N. Y.

JOSEPH S. FISHER,

No. 411 Commerce St., PHILADELPHIA, George Wostenholm & Son,

AGENT FOR WALTER SPENCER & CO., Steel and File Manufacturers, Rotherham, ENGLAND.

Corporate Mark

NO SPENCER HOTHERHAM

Granted 1777

RICHARD A. TURNOR

37 Chambers St., New York, Agent for

Hardware Commission Merchant, RIRMINGHAM. JOSEPH ELLIOT & SONS,

F. W. HARROLD,

Manufacturers of Razors, Table Knives, &c., SHEFFIELD.

AMERICAN

PEN AND POCKET KNIVES,

Aaron Burkinshaw. AB MASSACHUSETTS. My Blades are forged from the best Cast Steel, and arranted. To me was awarded the GOLD MEDAL of the Connecticut State Agricultural Society; also a Medal and Dibloma from the blade; Zethanias Ass a Sewt. 1999.



Celebrated I-XL Cutlery, Razors, &c Joseph Rodgers & Sons'

CELEBRATED CUTLERY, CHARLES PEACE, Jr., Agent.

The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Fremises and Steam Power.

To distinguish Articles of Joseph Rodgers & Sons' Manufacture, please to see that they bear their Composite Mark their Corporate Mark.

Notice of Removal. ASLINE WARD,

From 54 Beekman St. to No. 101 and 103
Duane St., N. Y.
EMPRESENTING
GEO. WOSTENHOLM & SON
CUTLERY AND RAZORS,
WASHINGTON WORKS, SHEFFIELD.



ED'K WARD & CO., SHEFFIELD, CUTLERY & TABLE MNIVES. GORPORATE MARK,



Grindstones, Emery, &c.



J. McDERMOTT & CO GRINDSTONES.

BUILDING STONES of every description, from the above quarries,
OFFICE, National Bank Buildings,
Cor. Superior and Water Sts. CLEVELAND.

Walter R. Wood.

GRINDSTONES

283 FRONT STREET.

NEW YORK.

EMERY WHEELS AND MACHINERY EMERY

TRADE MARK DIAMOND Emery Cloth, Tools, Mill Stone Oil Stones

Soapstone Register Borders. For particulars, address,

UNION STONE CO.,

16 Exchange and 26 Devonshire Streets, Boston, Mssa



CRINDSTONES J.E.MITCHELL PHILA.



BAND SAW MACHINES.

NES. Also. GENERAL and COUNTER OVAL TURNING LATHES for WOOD and NING, METAL SPINNING, etc. 18AW BENCHES, SHAFTING PULLETS, CHEULAR SAW BENCHES, SHAFTING PULLETS, and HANGERS.
A large assortment of the best FRENCH BAND SAW BLADEA at greatly reduced prices. And a Machine that will set an ordinary Band Saw PERFECT in two and a bail to three minutes.

Schweitzer Mfg. Co., 57 Reade Street, New York.



CONTINENTAL LOCKS.

SCHWEITZER PAD LOCKS, EXCELSIOR COMPASSES. EXCELSIOR DIVIDERS,

STUBS' STEEL POINTS, Best and Cheapest Goods in the market. Sole Agents

for the United States for NEWBOULD'S FILES AND TOOLS French Coffee Mills.
NOBLE MFG. CO., Tools, Ship Angers, &c. Emery, Waterhouse & Co., Shovels & Spades We also make a superior

'Queen of the Forest," AXE. "Queen of the Forest," &c. Disston's Saws. (Largest Stock in the City). General dealers in
FOREIGN & DOMESTIC HARDWARE.

William N. Jennings, FINE PRINTING STATIONERY

No. 43 Franklin Street,

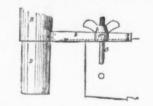
Bet. Broadway & Eim St.

New Patents.

The following patents have lately been ranted for useful inventions, of interest to

HANDLE FOR CROSS-CUT SAWS.

To William Clemson, Middletown, N. Y.-The andle is allowed to project beneath its attachnents to the saw, so as to form an additional and-hold beneath, and in line with the saw.



Claim .- A cross-cut saw bandle, secured to the saw by the single attachments B b, and screw hook bolt C, forming the extension D, which passes through and below its supports B, forming an additional hand-hold in line with the

TOOL HOLDER.

To Isaac W. Fink, Hillsborough, Ill. - Claim. The combination of the holder A, as shown, with a tool or instrument whose end is beveled to fit said holder, and

s provided with the right angled slot G and straight slot D, near the beveled end.

HAMES.

To Josiah Letchworth, Buffalo, N. Y.-Claim The combination, with a hame, of a loop atachment, consisting of two or more loops, conecting side pieces, and cross-bars, rigidly seured to the front edge of the hame.



2. The combination, with a hame and loop attachment, B, of the flanges b3 b3 and rivets

SHEARS FOR CUTTING OFF BAR IRON To William X. Stevens, East Brookfield, Mass. -1. The combination in shears for



cutting metal of the lever or shear arms. A and B, jointed, by means of a trunnion, upon the lever, B, entering and revolving in a complete chcular bearing on the lever, A (so held by means

of the collar, E. and bolts, F), with the dies, or hear edges, C and D, within the circular bearng of, and held respectively by, aforesaid levers, A and B.

2. The combination of lever, A, toothed ever, B, shaft, I, crank or eccentric, H, and

PADLOCK ormed of spring metal is rigidly secured at one end within the lock case, and its free end arranged to engage with a flange on the stem of a sliding shackle, so as to hold the latter in the

Claim .- 1. The spring bolt, D, previded with the stud, or projection, n, in step form, and working laterally, in combination with a shackle and a series of tumblers.

G, G, having slots t, t, and the key having a removed with the iron, as well as some other beveled ward.

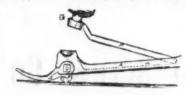
locked position.



CLAW HAMMER.

To Dexter W. Purker, Meriden, Conn. Claim.-As an article of manufacture, a bammer constructed by placing in the mold a previously prepared head, then pouring the metal for the body into the mold, the body and head united by the Irregular form of the head. NAIL EXTRACTOR.

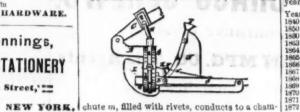
To Horace A. Nettleton, New Haven, Conn. By the pivoted hammer G, the jaws C and D,



can be driven into the wood each side of the nail. The handle serves as a lever by which to extract the nail.

fulerum E, and hammer G.

DEVICE FOR RIVETING THE TEETH OF SAWS. To Charles N. Brown, Providence, R. I .- The



ber in handle O, and to insert a rivet the saw is clamped in head A by plate L. The handle is then pushed through the head until slide R lies in the recess f in the head; plunger I then forces slide R down and liberates a rivet, and the latter is forced through the saw and adjusted by plunger J and other devices, after which, by means of the system of levers, the two punches H are forced in, and these, with their double-cutting edges, incise and spread the ends of the rivet.

PADLOCK. To Win. Wilcox, Middletown. Conn. Ciaim. A rotating key hub, with a cavity

or counter bore at one end, and a slot at the opposite end, the cavity and slot meeting, forming bearings for the sides and edges of the flat key, and supporting it firmly in its proper position while performing

CLAW BAR.

To Daniel Ferenback, Toledo, Ohio .- Claim .-The combination of the bar, the shoe having a

rounded sole to

crum, the rocking dog pivoted on the upper side of the shoe, and the lifting spring interposed

etween the bar and the projecting rear end of the dog, whereby the shoe and dog are always pressed toward each other, these members being constructed and operating as and for the pur-

TROWEL. To Walter S. Hasel-

ine, Hampstead, N. H. -The ferrule is prolonged downward upon the shank, forming a guard, to protect _ the forefinger from contact with mortar.

SASH PULLEY.

To Amos Halladay, Westfield, Mass. - Cla

A sash pulley face plate, B, formed of the discs E. each of the same diameter, the end ones centrally perforated and the middle ones having one common slot, G, as de-

scribed, so that with a single auger the plate may be inserted in the window frame, while the pulley will require no special mortise,

Some experiments have been recently made in Austria by A. Eschke, Assayer of the Royal Imperial Assay Office, on removing iron from zinc blends by the magnet. The experiments were made with blend from Pribram, which contains 33-29 per cent. of carbonate of iron, 3.75 per cent. iron pyrites, andonly 25.67 per To Hermann Ahrend, Newark, N. J .- A boil cent. of sulphide of zinc, the remainder being manganese, lime, magnesia, lead, quartz, and other impurities. When purecarbonate of iron is ignited for half an hour it is entirely converted into the protosesquioxide, which is attracted by the magnet. On heating the blend just mentioned without admitting the air, it was found that it lost 15 per cent, of its total weight, due chiefly to carbonic acid expelled. Of this residue 46 per cent. was attracted by the magnet, and it was found that the amount of iron that could be removed in this way equaled 43 per cent. of the total 2. The combination of the shackle stem C weight after ignition, leaving only 7 per cent. with flange e, bolt D with step stud u, tumblers of iron in the residue. The manganese was all adhering substances. With full access of air the results were but slightly different. The amount of metallic zinc in the blend was at first only 17.2 per cent.; after concentration by the sion or spiral spring, of the above process it was increased to 32.8 per cent. There is, however, a slight loss of zinc which adheres to the Iron and is drawn out by the magnet. This amounts to nearly one-fifth the total quantity present at first, if the air is excluded during the roasting or igniting; if air is admitted the loss is but half as great, while the concentration is nearly the same, the difference

> The report of Hon. A. T. Wikoff, Secretary of the State of Ohio, for 1873, says of iron manufacturing in that State :

being only 2 per cent.

The industry is confined to fourteen counties, viz: Carroll, Columbiana, Fairfield, Hocking, Jackson, Lawrence, Muskingum, Perry, Scioto, Stark, Trumbull, Tuscarawas, Vinton and Washington. These produced of iron ore in

The figures of 1873 would show a large inrease over 1872, but, marked as the increase has been, Ohio imports more than double the amount of ore it produces. The Lake Superior mines produced, in 1873, 1,066,875 tons, and of this more than three-fourths were smelted in Ohio. Cleveland alone smelted 689,440 tons of Claim.—A nail puller constructed of the lever Lake Superior and Canada ore during the year. A, stem F, fixed and adjustable claws C and D, Beside, a large amount of Missouri and Tennessee ore is smelted in Southern Ohio. The production of pig iron in Ohio for a series of

years is shown by the following figures :

H. D. SMITH & CO., PLANTSVILLE, CONN.



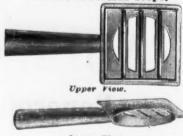




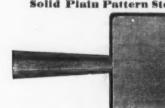
Established 1850. 1871 Pattern Shaft Couplings.



Patent Cross Bar Steps,



Solid Plain Pattern Steps.



Smith's Improved Philadelphia Pattern Slat Irons.

MANUFACTURERS OF A LARGE VARIETY OF FIRST-CLASS

FORGED CARRIAGE IRONS.

Send for Price List.

FORT PLAIN SPRING & AXLE WORKS, CLARK, SMITH & CO.,

Green Jacket Axles. FORT PLAIN, N. Y. Fine Carriage Springs.



MANUFACTURERS OF

English and Swedes Steel Springs, and Iron and Steel Axles. Execute orders promptly for

Black, Bright, Tempered and Oil Tempered Springs, Of any Pattern or Style. Also for AXLES of any description, from a COMMON LOOSE COLLAR to the FINEST OF STEEL.

Our facilities for manufacturing are very extensive, and with our recent additions of new and improved

chinery, we defy competition.

Send for Price List and Descriptive Circular.

CARRIAGE BOLTS.

Buy the Best.



Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not MANUFACTURED BY

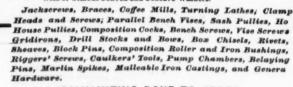
CLARK BROS. & CO., Milldale, Conn. Also Manufacturers of

Plow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c Send for New Illustrated Price List, just completed

WILSON MANUFACTURING COMPANY., NEW LONDON, CONN.

SULID BOX VISES.

With or without Convex and Concave Washers.



GALVANIZING DONE TO URDER.

WILSON MFG. COMPANY,

Warehouse, 37 Chambers St., N. V.

The National Screw Co.,

MANUFACTURERS OF

Patent Dovetailed Slot Gimlet-Pointed

COMPLETE ASSORTMENT OF SIZES.

RUSSELL & ERWIN MFG. CO., Sole Agents

45 and 47 Chambers Street, New York.

P. O. Box 3388

Orders filled promptly

J. PALMER & CO.,

Superior Temper, Warranted. CONCORD, N. H.

Iron & Brass Wood Screws.

ALFRED FIELD & CO.,

Importers,

47 John, and 5 Dutch Streets, N. Y.

iiladelphia Star Bolt Works.

"STAR"

Carriage and Tire Bolts, NORWAY IRON.

Button Head. Trade QUALITY GUARANTEED.

Carriage and Tire Bolts, CHARCOAL IRON, Beveled Head.

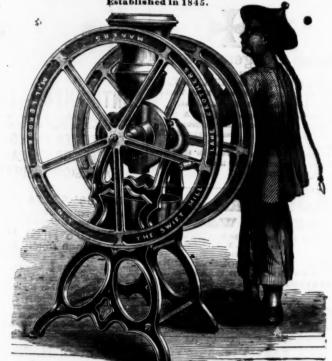
QUALITY UNSURPASSED.
Old New England List.

The Celebrated "STAR" Brand of Axle Clips. Blank Bolts, Wood Screws, Square Head Bolts, Plow Bolts, &c., &c.

Our I X L

point of appearance to the regular Philadelphia Carriage Bolts, being made on the same machinery, and
the quality is not surpassed by any bolt of like grade in the peach of

TOWNSEND, WILSON & HUBBARD, 2301 Cherry St., Philadelphia, Pa.



A handsome highly finished Mill, with a large burnished brasshopper, 40 inch flywheel, standing over five feethigh. We make more than 20 different styles and stres. Werranted the best in use. Send for Catalogue.

MANUFACTURED EXCLUSIVELY BY

LANE BROTHERS Millbrook N. Y.



ARMS, BELL & CO.,

Carriage, Tire & Square Head

Bolts. Cold Pressed Nuts and Washers, Etc.,

YOUNGSTOWN, OHIO.



H. M. WENTWORTH & CO.

Carriage Axles & Springs, BEST SWEDES STEEL, Sword Tempered, and

Common Patent Tempered SPRINGS

Send for Price List. H. M. Wentworth. F. A. Plaisted. David Wentworth.

HOWSONS OFFICES FOR PROCURING

UNITED STATES AND FOREIGN PATENTS,

Forrest Buildings 119 SOUTH FOURTH ST., PHILADELPHIA,

AND MARBLE BUILDINGS 1605 Seventh St. (Opposite U. S. Patent Office, Washington, D. C.

H. HOWBON, of Pater ts. | C. HOWBON Solicitor of Pater ts. | C. HOWBON Attorney Law. Communications should be addressed to the PRINCIPAL OFFICES PHILADELPHIA.

TAMES A. WHITNEY, Patent Agent

and Expert, offers his service to inventors securing American and Foreign Patents, as per in patent cases, etc.

"We take pleasure in commending the new agent to the favor of inventors." The Iron Age, June 6.

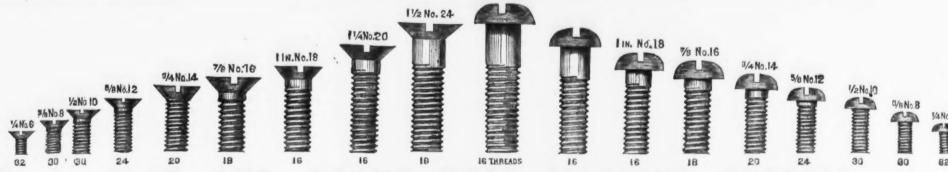
"Of Frod. James A. Whitney we can be personal acquaintance. Any person ecking professional advice iron him will be certain of patents and be orable treatment." Norwick, Conn., Dully Adventor



OILERS! OILERS J. H. WHITE, Newark, N.

MANUFACTURER OF Olmsted Patent and Common Oiler of all descriptions,

Colwell Patent Boor Spring dren's Carriage Trimmings, Spun a gtamped Brass for all Trades, D and Too's &c., &c. 11/2 IN.No.24



HEAD MACHINE

OF SIZES, Nos. -8, 10, 12, 14, 16, 18, 20, 24, SCREW GAUGE. AND LENGTHS -

PLUG AND BOTTOMING TAPS.

Manufactured, KEPT IN STOCK, and sold by

PROVIDENCE, R. I. AMERICAN SCREW COMPANY,

Fillister Head and Pattern Machine Screws Made to Order Promptly



ad

GN

G. M. STEVENS, 146 Commercial St., Portland, Me.

ESTABLISHED, A. D. 1833 and 1855.

JACOBUS & NIMICK MFG. CO.,

Pittsburgh Novelty Works & Pittsburgh Variety Works,

LOCKS AND LATCHES.

Fairbanks' Standard Platform and Counter Scales, Paint and Coffee Mills, Builders' and Domestic Hardware generally.

New York Office, 96 Chambers St., N. Y.



ly, we advise merchants who wish them to send in early orders, which will be filled in rotation as received. We hope not to disappoint as heretofore for want of goods. Every Hoc is warranted and prices are uniform. Address,

Peters Bros. Manufacturing Co., SOLE PROPRIETORS.

"The BEST in the WORLD!"

Marshall, Mich.

BLATCHLEY'S lorizontal Ice Cream Freezer,

(Tingley's Patent) For Saloons, Hotels, Ice Cream Manufacturers, or Families. STANDS ENTIRELY UNRIVALED!

With the aid of this Freezer a most delicious desert of Ice Cream, Water Ice, or Frozen Froits, Custards, &c., may be frozen in from five to eight or ten minutes, at the will of the operator, with almost no trouble and but trifling expense. It is acknowledged the "Best Freezer in the World," and a luxury no family should be without. The Closed Head will save Ice enough none scason to pay for the Machine. The Tub requires but one filling to freeze. Sizes 3 to 40 quarts. For sale by the trade generally.

Applications should be accompanied by business card.

CHAS. G. BLATCHLEY, Manufacturer, 506 Commerce St., Philadelphia, Pa.

MIDDLETOWN TOOL CO., MIDDLETOWN, CONN.,

MANUPACTURERS OF

The Celebrated "Baldwin" Plane Iron. HENSHAW'S PATENT HARNESS SNAPS

GERMAN HARNESS SNATS, PAT. GAFF TOP-SAIL SELF-MOUSING SHIP HOOKS

Plow, Filletister & Dado Stops of all kinds. Set Screwslop Plows, Bench Pinne Storts, &c. Patent Washer Cutters, Plant Iron Screws to order of any size. Sent for linetrated Catalogue and Prop. List.

NORWICH LOCK MFG. CO.,

NORWICH, CONN.

Agencies:

Hogan, Clarke & Sleeper, 82 Chambers St., N. Y. Adams & Chute, 19 eliver St., Boston.

I. G. Brenner, Son & Co., 21 North 5th St., Phila.

F. H. Davidson, 138 Franklin St., Baltimore.

DIRECTIONS FOR USING

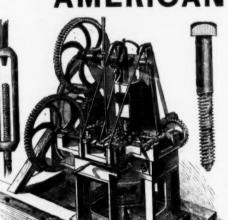
L. B. Taylor's Patent Speed Indicator.



To ascertain the number of revolutions made by a shaft in any given time Take the Indicator by the handle in the right hand, holding your watch in the left, press the point of the spindle gently against the end and center of the shaft. To every hundred revolutions of the shaft the Hundred Pointer will make one revolution, while the Thousand Pointer will indicate one number, the dial being marked into ten parts. It may be applied to a shaft revolving either to the right or

Manufactured only by CONN. CUTLERY CO., NAUGATUCK, CONN.,

COMPANY, BOLT



MANUFACTURE BOLTS AND NUTS.

Coach or Lag Screws, Washers, Chain Links, Forglings, &c. OF ALL KINDS AND SIZES, AT SHORT NOTICE.

210 Lawrence St., Lowell, Mass.

ROBERT H. BUTCHER.

PARALLEL SWIVEL STRONG, DURABLE,

Wrought Iron Bar.



Solid Box.

Price. \$11.00 13:00

CHARLES MERRILL & SONS. 556 Grand Street, NEW YORK.

E.C. HOLLIDGE. Send for Circular. MINNEAPOLIS, MINN J. A. Knowles, Jr. STANDARD

Fletcher St., Lowell, Mass.

Water

240 lbs. Scales a specialty



Patent

&FILTERED WATER A perfect success, accomplishing results never claimed for any Filter ever before invented. This Filter is now the acknowledged Standard all over the Send for Circular.

JNO. C. JEWETT & SONS BUFFALO. N. Y

The Iron Age.

New York, Thursday, April 2, 1874.

		-		×		10.12
DAVID WILL	IAMS				Publisher	and Proprieto
JAMES C. BA	YLES				Editor.	
JOHN S. KIN	G .	0	8	7	Business	Manager.

The Iron Age is published every Thursday orning, at No. 10 Warren Street, New York, on

Weekly Edition	84	a year.
Issued every THURSDAY Morning.	Con	tains full
'I'rade Reports for the week, brought of business on the previous day.	up to	the close

Semi-Monthly Edition \$2 a year. Issued the First and Third Thursday of every mouth. Contains a full Review of the Trade for the previous half month.

Monthly Edition \$1 a year. Issued the First Thursday of every month. Contains a full Review of the Trade for the previous

To	Weekl	y.	Semi-M	onthly.	Month	ly.
Canada	. \$4 40		\$2	40	\$1	24
Great Britain	. 6 00		3	00	1	50
France	. 6 00		8	00	1	50
Germany	. 8 00		4	00	2	06
Practia	. 8 00		4	00	8	00
Buenos Ayres			4	00	2	90
Peru	. 6 00		3	00	1	50
Belgium	. 8 00			00	2	60
Mexico	. 7 00			80	1	75
Bweden			6	00	3	00
New Zealand	. 8 00		4	00	2	00
Brazil	. 6 60		8	30	1	65

ADVERTISING.

. One square (12 lines, one inch), one insertion, \$2.50 one nonth, \$7.70; three months, \$15.90; eix months \$85.00; one year, \$40.00; payable in advance.
All communications should be addressed to

DAVID WILLIAMS, Publisher, 10 Warren St., New York.

EUROPEAN AGENCY.

CHARGES CHURCHILL & Co., American Merchants, 28 Wilson Street, Finsbury, London, England, will receive subscriptions (all postage prepaid by us) at the following prices in sterling: Great Britain and France, 25; Germany, Prussia and Belgnum, 334; Sweden, 50/. They will also accept orders for advertisements, for which they will give prices on application.

City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering The Iron Age: also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

CONTENTS.

First Page.—An Improved Radial Drill. The Character of Metals as Exhibited by their Fracture. Artesian Wells in the Colorado Desert. Third Page.—Iron Domes.

Fifth Page. - The Pipe Founding Trade in Glasgow. An Iron Works in Sweden. The Action of Acids upon Zinc.

Seventh Page.—Prospecting for Iron Ores. The Magnetic Metals.

North Page.—Business Items. The Labor Prob-lem at Ironton, Ohio. A Novelty in Cheap Trans-portation. Eleventh Page .- New Patents.

Fourteenth Page,—American and British Iron and Steel Exports. A Representative American Mechanic. Southern State Credits Abroad. The Tariff

Fifteenth Page.—American Exports of Irun and Steel. British Iron and Steel Exports. Sixteenth Page.—A Laboratory for Mechanical Tests of Iron. Seventeenth Page .- Trade Report.

Eighteenth Page.—Trade Report (concluded).

Nineteenth Page.—Trade Report (concluded).

Philadelphia Correspondence. London Metal Market.

Twenty-third Page .- The Iron Age Directory Twenty-sixth Page. New York Wholesale Prices of Hardware and Metals.

Twenty-seventh Page. New York Wholesale Prices (concluded).

Thirty-first Page —Philadelphia, Buffalo, Pitts-urgh, Detroit, and Cincinnati Hardware and Metal Thirty-third Page—Chicago, Boston, and St. Louis Hardware and Metai Prices.

American and British Iron and Steel Exports.

Edward Young, Chief of the Bureau of petition with Great Britain.

tion. Although the shipments in February, rising firm of locomotive builders in Phila-1873, were smaller than for the correspond- delphia.

pare as follows: 1872, 53,131 tons; 1873, 21,063 tons: 1874, 9,543 tons. Russia, Sweden and Norway, Germany, Italy, Australia are purchasing more liberally this year than last in the British markets; but Belgium, Holland and British North America appear with the United States on | four driving and four truck wheels, now althe other side of the account. In pig iron the decrease for the two months, as com- this firm built an engine called the Gowan pared with the first two months of 1873, is very great-about 50 per cent.; in bar pany, which drew one hundred and one and rolled iron 23 per cent., and in other items in proportion. The total exports of precedented feat in locomotive traction. iron and steel for the two months, show a falling off of 27 per cent. Were it not for the small increase in tin plates the percentage of decrease would be still larger.

These figures are significant. If the time railroad system, with a view to its adoption. has not yet come for an effort to build up Attracted to the works of Eastwick & an export trade in American iron and iron manufactures, it is not far off. Certainly the time is at hand for the putting forth of every effort to cheapen the cost of iron production, to the end that we may make the locomotives and rolling stock of the a foreign market for our surplus. For St. Petersburg and Moscow Railroad, a line formidable competitor for the world's iron trade, and with her power to increase her production definitely limited, it is evident that our own vast and varied resources must soon be drawn upon to supply the ever increasing requirements of non-producing countries. So, at least, we believe, and the statistics to which reference is made above, show that the tendency of events is steadily in the direction we have indicated.

A Representative American Mechanic.

It is rare in American life to notice the success of self made men, no matter what the position to which they may have career a fit subject for history. Perhaps we err in thus failing to point out the success of the successful, but the avoidance comes from the feeling that with us energy, prudence and integrity will enable like success to be attained by all. The recent death of Joseph Harrison, of Philadelphia, affords an opportunity to point those struggling up from the workshop to the higher ranks of life, to a career which has rarely been surpassed, and which offers a lesson to the young mechanic which should not be allowed to pass unnoticed. Joseph Harrison, Jr., has of late years been best known by his great wealth, fondness for art and culture, and by his latest invention, the Harrison Steam Boiler, than by his earlier achievements which formed the foundation of all that came later. Starting in life as a machinist's apprentice, he worked his way up patiently and steadily, through the various grades of journeyman, foreman and proprietor in the same business; afterwards engaging in locomotive building, and subsequently going to Russia, where, with others, he established In another column of this issue we publocomotive building, and laid the foundalish two interesting tables of comparative tion of a princely fortune, which he enjoyed exports of iron and steel from the United liberally in common with his friends, dying library. Many of these paintings were made States and Great Britain. The table of in his native city at the comparatively early to order from subjects chosen by Mr. Har-American exports, compiled by Mr. age of sixty-four. The principal events in rison himself. Among these was Schus-Mr. Harrison's life may Statistics, makes a very satisfactory show- follows. He was born in Philadelphia in ing of comparative totals for the years 1872 | 1810, and at fifteen years of age was apprenand 1873. The total value of our exports ticed to a machinist in Kensington, who of iron and steel and manufactures there- failing within two years, left young Harriof, for the calendar year ended with son to finish his trade elsewhere. After throne, at the completion of the temple, to December, 1873, was \$16,687,754, against becoming a journeymen, he worked at his \$14,360,617 for 1872, an increase of \$2,327, trade until 1833 or 34, when he was sent cers engaged in its construction, and de-137. In some of the items specified there to Port Clinton, Pa., to erect some machin. fended the smith in thus enforcing the dighas been a falling off, but in most articles cry for Amadeus Tiers, of the Point nity of his art by occupying the throne it of export the increase is greater than was Pleasant Foundry, Kensington, in which expected. In agricultural implements the his father was for many years bookkeeper. increase is 42 per cent.; in iron and manu. At this time locomotive building had befactures of iron, 21 per cent.; in steel and gun to attract attention, and a shop was its painting, as in keeping with the trade manufactures of steel, 18 per cent.; and in started near Fairmount, the site of the to which he owed success and of which he the total exports, 16 per cent. This is cer- present water works, by a Col. Long, for was always proud. The latest invention tainly a very satisfactory showing, and one this business. The late M. W. Baldwin, which gives ample confirmation of our oft founder of the Baldwin Locomotive Works, expressed opinion that it is possible to had previously engaged in the business, build up a great and profitable export trade and others were embarking in it. Long in iron and manufactures of iron in com- and William Norris, of Philadelphia, were associated at this time, and in their shop The British Board of Trade returns, on Joseph Harrison commenced his career of the other hand, show a heavy falling off, locomotive building in 1834, soon becomand indicate that the iron trade of that ing foreman, and in 1835 was engaged as country is in a very unsatisfactory condi- foreman by Garrett & Eastwick, a new and

1874, show a falling off from 1873, which and built the locomotive Samuel D Ing-

capital of the concern. This firm was During the existence of Garrett, Eastwick weight of the locomotive on the driving wheels was patented by Harrison, in 1839, and the style of eight wheeled engine with most exclusively used, was adopted. In 1841 & Mary for the Reading Railroad Comloaded coal cars over the road, then an un-

In 1840 the Russian government sent two

of its most eminent engineers, Count Mel-

nikoff and Col. Kraft, to the United States

to examine and report upon the American

Harrison by the reputation of their en-

gines, these officers, on their return to

Russia, recommended that Harrison be

sent for to undertake the construction of

reasons before given in detail in these of 400 miles then projected under the encolumns, we believe England can never gineering charge of Major George W. regain ground she is losing. With the Whistler, an American, called to Russia in growth of the demand for iron in countries | 1842 as consulting engineer of the railway hitherto exclusively supplied from British department of the Russian government. markets, other sources of production must In 1848 Mr. Harrison sailed for Russia, be drawn upon, and the orders will natu- and in December of the same year, rally come here. England is our only in connection with his partner, Mr. Eastwick, and Thos. Winans, of Baltimore, contracted with the Russian government for the work, for the sum of \$3,000,000, a condition being that Russian workmen only should be employed, when practicable. This contract led to a subsequent one of equal amount, both being success fully carried out. A contract was then made for the maintenance of the St. Petersburg and Moscow Railroad in rolling stock for twelve years, which was concluded in 1862, to the entire satisfaction of the government. In 1847 the works of Harrison, Winans & Eastwick were visited by the Emperor Nicholas, the Grand Duke Constantine, Prince Paskewit, brother of the present Emperor, and other dignitaries, attained, until after death has made their and after spending several hours in examining the work, explained to them by the former Philadelphia apprentice, the Czar sent each of the firm a diamond valued at \$3000. In 1850 further honors were conferred on Harrison, on the completion of the bridge over the river Neva, the Czar personally decorating him with the ribbon of the Order of St. Anne and with a mas sive gold medal. The magnitude of this work in Russia, conducted entirely by Americans with a personnel of laborers speaking an unintelligible language and totally ignorant of their duties, has never been sufficiently acknowledged; but the work was done, and laid the foundation for American supremacy in Russia which has since been maintained in all matters pertaining to railways and machinery. Mr. Harrison returned to Philadelphia in 1852, and resided there afterward up to his death. He planned and erected an elegant residence occupying one side of a square and flanked by a row of superior dwellings, all opening upon a private park. Here he constructed the finest private art gallery in the country, and by his liberality and taste for art filled it with rare paintings and sculpture, and added a valuable sele's painting of King Solomon and the Iron Worker, now well known through steel engraving copy. This painting is illustrative of a Hebrew legend, and shows a brawny smith occupying Solomon's which the King had invited all the artifiself. This legend had always been fresh in the mind of Harrison from boyhood, and when wealth permitted he procured of Mr. Harrison, after his return to Philadelphia and when wealth and position would have prompted most men to seek ease, was the Harrison Safety Steam Boiler. which he considered, after many years of study and experiment, the best and most economical method of generating steam safely. This boiler, as is well known, consists of a series of small cylinders or

trade journals. In some items the decline Company. This engine had many novel tor. At the London International Ex- us that not a dollar of the legitimate inis equal to 40 per cent., and the total is, at points, the principal of which was the hibition, 1862, this boiler received the debtedness of the State of Tennessee has least, 40 per cent below that for February, method of reversing, the invention of highest class medal for "originality of de- been repudiated. This is true. The law This is due chiefly to the falling Andrew Eastwick, of this firm. In 1837, sign and general merit." With his fond passed by the legislature in March, 1873, off in the requirements of the United at twenty-seven years of age, Harrison be ness for art Mr. Harrison was constantly provided for the funding of all outstand The shipments to the United came a partner in the firm of Garrett, East- doing liberal kindnesses to artists. Some ing legally issued bonds, due or to become States for the month of February com- wick & Co., investing his skill against the fifteen years ago he commissioned the due before January 1st, 1874, as well as all venerable artists Rembrandt Peale and past due coupons and coupons maturing soon changed to Eastwick & Harrison. Thomas Sully each to paint the portrait of on or before January 1st, 1874, in a 10.40 the other, and when the work was finished, six per cent. bond, bearing interest from Egypt, Brazil, Peru, Chili, India and & Co., the present mode of equalizing the invited the two artists to his house with a July, 1874. A letter from the State treaslarge company to greet them, a courtesy urer, which we have seen, says that particularly agreeable to these celebrated the money to pay the interest is ready, or painters, both then over 80 years of age. will be by the time it is needed. So far as A prominent director of the Academy of we know, the only bonds rejected are those Fine Arts, he sustained by his purchases of the "Mineral Home Railroad," to the many of our American artists, and contrib- amount of \$100,000, and of the "Insurance uted largely to the Fairmount Park Art Company of the Valley of Virginia" to the Association. A ready and practical writer amount of \$20,000. Probably this action occasional contributer to the scientific was, and we see no reason why Tennessee periodicals, and in 1872 wrote a book, en- should be looked upon with especial distitled "The Locomotive Engine, and Phila- favor by foreign investors and capitalists delphia's Share in its Early Improvements." but the fact remains that the "Council" Without a literary education, he was a terse have warned the British people against and forcible writer, indicating his charac- Tennessee investments, and the probabiliter as clearly with his pen as in his ties are that the securities of that State machinery. The life of this man is will not be regarded with much more surely an example to every American favor abroad until it is certain that the The success here attained was not due interest on the debt as funded. But, be to especial ability or natural genius, but this as it may, if a State credit is the result of patient, persevering industry destroyed abroad, or so weakened as to in one pursuit. Five years after entering on his apprenticeship he was a foreman, the foreign capital necessary for the develand in twelve years from the first date, a partner whose skill was considered an chief would result from concealing the later on, in eighteen years after his first know what is said and thought of them start as a boy, he is contracting with one of abroad, to the end that they may bring the most powerful governments of the world such influence to bear upon their reprefor a work of three millions of dollars value. How many skilled workmen can look back on eighteen years of equal opportunity and not confess their lack of success. It was not good luck or fortuitous circumstance that brought the Russian contract, the day, attained only by hard work and patient study, and by the same means within the reach of every mechanic. It is to be paid, as we understand it, but to be not accorded to every man to amass the funded as part of the State debt. This is, great wealth earned by Mr. Harrison, who leaves an estate valued at seventeen millions of dollars, and on which he prided it should be regarded with dissatisfaction himself far less than on his mechanical success; but it is by following such examples that mechanics may elevate themselves, advance their profession and add honor and dignity to their country. For Foreign Bondholders." That it will do this purpose and not to venerate the man, whose life was his best praise, has this certain of our Southern States, no one sketch of Joseph Harrison, Jr., been

Southern State Credits Abroad.

We have received the following communication from a prominent iron master of

the South:

CHATTANOGGA, TENN., March 24, 1874.

To the Editor of The Iron Age: My attention has been called to an article in your paper of the 19th inst., headed "The Council of Foreign Bond Holders." In this council the credit of the State of Tennessee appears to be handled pretty roughly. The following language is used: "All the States named above come in for their share of reprehension, but Virginia, West Virginia and Tennessee are the most severely handled, the last of which 'cannot be accepted in the future as a solvent borrower by those in the United States, or abroad beyond its own frontiers.' The result will very probably be the exclusion of the State of Tennessee from the privileges of the market."

Now I. Grent you fully that for some time. the South :

its own frontiers.' The result will very probably be the exclusion of the State of Tennessee from the privileges of the market.''

Now, I grant you fully that for some time after the war her debts were unpaid, but what was her condition? Her strong men were in exile or humbled to the dust, and her Council Chambers and Halls of Justice were literally in the hands of the Philistmes. Not only were her obligations unpaid, but new ones were continually manufactured and poured into the pockets of favorites. Railways were chartered by the hundred (see acts of term 66 to 69), some of them having a name but no habitation—commencing at an imaginary point, and running to some other unimaginary point, and ret getting their \$10,000 per mile, with not one dime spent upon the lines. Yet, with all this load upon her, she has risen from her prostrate condition, shaken off the incubus that was hanging upon her, and with what result?

In the first place she has not repudiated \$1 of her legitimate indebtednes, and her bonds stand to-day, quoted at the N. Y. Stock Board, at from 90 to 95 cents on the dollar, which, taking the facts into consideration that they are only 6 per cent. bonds, clearly shows that they

at from 90 to 95 cents on the dollar, which, taking the facts into consideration that they are only 6 per cent. bonds, clearly shows that they are as fully appreciated, or nearly sc, as those of any other State of the Union; and any person owning a coupon, or any number of them, falling due the first of July next, can have the money for the same at any time by sending them to the State treasurer at Nashville, he deducting only 6 per cent. Per annum from the moment they reach his hands up to the first of July. These facts, I certainly think, speak for themselves, and do not warrant the conclusion that you and the "council of foreign bondholders" have arrived at. God knows, we fully admit that "our crimes are great," or are so, at least, that "our crimes are great," or are so, at least, have arrived at. God knows, we fully admit that "our crimes are great," or are so, at least, in the minds of the Northern people; yet do give us a little credit when we deserve it, and don't continue to cry war! war! long after the hatchet is buried, our debts being paid, and we are minding our own business. Vulcan.

In presenting the facts which appeared in our issue of March 19th concerning the 'Council of Foreign Bondholders,' were influenced solely by a desire to call globes connected by pipes, and the first the attention of the people of some of the been several times the subject of pat- foreign capital to assist in the development from below 7 to above 11 cents per pound, for

is regarded with alarm by the English ham, for the Beaver Meadow Railroad ents for improvement by the inven- of their resources. Our correspondent tells on cognate subjects, Mr. Harrison was an could not have been taken sooner than it mechanic of the possibilities before him. Treasury will be able to continue paying discourage or prevent the investment of opment of its resources, nothing but misequivalent against capital, and three years fact. The people of those States should sentatives as will lead them to make provision for the payment of all outstanding liabilities at the earliest practicable moment. The fact that Tennessee has taken a step in the right direction, and that it promises hereafter to protect its securities, -it was the best locomotive-making skill of should, we admit, be accepted as making some amends for the delay in paying the matured coupons, which are not even now of course, a great deal better than repudiation, but we can readily understand why by the foreign holders of State securities.

> importance and influence of, such a document as the report of the "Council of much to discourage English investments in knows so well as those who have tried, and are now trying, to negotiate American coal and iron property in London. We are sorry the report was ever issued, doubly sorry that it should have any basis of truth to rest upon; but we are not sorry we laid the subject fairly and impartially before our readers in the South, with such wise and friendly counsel as we were able to give. No reader of The Iron Age can justly accuse us of ever manifesting a desire to revive the bitter memories of the war. Such influence as we have has been freely given in aid of all legitimate industrial en terprises in the South, and we believe the time is not very far distant when a large proportion of the iron produced in the United States will be made south of the Potomac and the Ohio; but no one will deny that foreign capital is needed for the rapid development of the mineral resources of that section, and that, for the present, the chances are against their getting it; and we should neglect our duty did we fail to urge the importance of such action as may be needed to restore and strengthen Southern credits in the foreign money markets.

It is useless to disregard, or disparage the

The Tariff on Steel.

The following strong memorial from the steel consumers and steel manufacturers of the country, who are satisfied with the present duties on imported steel, is being numerously signed. and will be presented to Congress next week The undersigned, consumers of steel, and manufacturers of steel and steel products in various forms, respectfully memorialize your honorable bodies to maintain to the fullest extent the existing law for the protection of our common interests. We beg you to consider that the propositions made to change or abolish these laws affect not only our own prosperity, but our very existence in many departments of

industry, and also, through us, that general

prosperity of the country through which alone

the foreign trade itself can be maintained.

A small and exceptional class of steel con sumers claim, in a petition already, or soon to be, laid before your honorable bodies, that the natural growth of their business is "greatly hindered by the enormous and excessive tax now levied on steel of foreign manufacture. But these petitioners certainly do not compre hend, neither do they truly represent, the facts of the case, which do not disclose any actual griev-ance nor any ground for just complaint. On the was put in operation in 1859, at the Southern States to the necessity of doing contrary, the duties collected on all the foreign works of William Sellers & Co. It something to prevent the disappointment steel entered into consumption in the United ing month of 1872, those for February During this period Mr. Harrison designed was first patented in 1859, and since has of their reasonable hopes of obtaining States, and classified within the range of values

the eleven months ended June 30, 1873, embrac ing the whole period of that fiscal year under the reduced tariff, amounted to an ad valorem of almost exactly 33 per cent.; whereas the aggregate duties collected on all dutiable goods for the fiscal year, averaged ad valorem, were equivalent to 38 07 per cent., showing that the steel specified was subject to 5 per cent. less duty than the general mass of dutied imports Further, taking the total of steel and manufactures of steel imported during the said eleven months, the average ad valorem rate was 37:11 per cent., and 37.51 per cent. for the whole fiscal year; thus evidencing that steel, classified within the range of values from below 7 to above 11 cents per pound, was admitted at some 4 per cent. less than the general average for steel and steel products of all kinds. Nor is this all; for, of the steel classified as stated, the lowest grade paid duty for the eleven months at the rate of 30½ per cent., while the higher grade paid at the rate of 27½ per cent., and the highest grade at the rate of 33% per cent., proving that the most expensive classes of unwrought steel are subjected to lower en

try charges than the cheapest class; yet the pe titioners named claim to find their grievance in the lower charges. We respectfully submit whether these unquestionable facts sustain, in the smallest degree, the charge that the existing

duties are "enormous and excessive." The aforesaid petitioners, in making their appeal to your honorable bodies, call your atten tion to "the important position occupied by the manufacturers of agricultural and mechanical implements, consumers of foreign steel in the United States." In return, we would ask your attention to a fact, almost notorious throughout the steel trade, that an insignifi-cant fraction of the steel consumed by the manufacturers of agricultural implements is of foreign make, but that the bulk of quantity is of American production; while of the other classes who consume foreign steel, either in part or in whole, nearly every one who produces largely enjoys a considerable export demand for his products. We would further ask consideration for the fact that these manufacturers, as a class, engross the markets of the United States, to the almost entire exclusion of their European rivals; and that, with advanced prices

of levy would not cheapen steel to the mass of American consumers, even by the sixteenth of a cent per pound.

Moreover, we respectfully represent that the claim of the aforesaid petitioners for reduction of duty does not state the facts correctly on the important point of exporting American manufactures made in part of foreign steel. By the Act of June 6, 1872, the privilege of drawback, or of full refund of all duties paid, less 10 per cent, was extended to shovels, spades, the arms, scales, balances, axes, hammers, hatchets, dc., one-half of the materials of which is unported; and this exemption is fully realized by most New England manufacturers. Indeed, nearly all who manufacture for export bave for years received a full refund of all duties paid, upon shovels and axes particularly. To these leading manufacturers steel has been and is practically free of duty, so that their allegation that the export of articles "into which foreign steel enters as a chief component part," is prevented or obstructed by the tariff acts, is simply untrue. In actual practice, this refund of the duty on such articles is largely and liberally made.

The request made by the aforesaid petitioners,

he

do m ne

id re iso

ill

to

ties ed,

and s in

ex-

our

der lish

ity,

eral one

eon-

the

atly re."

riev-

the

ited

lues

made.

The request made by the aforesaid petitioners, that the invoice foreign price paid by bona fide purchasers be recognized as the dutiable value by the appraisers at the United States ports of entry (without regard to the real market value), would be utterly subversive of the principle involved in the present system of levying duties, and would practically result in entering all classes of goods for import (on which advalorem duties are imposed) at prices less than their true market value.

Finally, the request of the aforesaid peti-

duties are imposed) at prices less than their true market value.

Finally, the request of the aforesaid petitioners, that "the system of taxation shall be changed from the present assessment ad valorem to a specific rate," should, in the opinion of the undersigned, be disregarded. We are content with the duties as at present levied. With all the imperfections of the existing plan, we, as well as the government, are likely to be better off than under some new and untried scheme, whose results are as yet purely theoretic and partly conjectural. A specific duty, fully divorced from the ad valorem principle, could be adopted only at the expense of American consumers no less than of American producers of steel. Within such a level range of entry charge, production on our soi, would find help where it has already won the victory, and encounter reinforcement of our foreign competitors where the victory is yet partially to be won.

The undersigned are prepared, and, if circular contributions where the victory are prepared, and, if circular contributions are contributed as a prepared and if circular contributions are contributed as a prepared and if circular contributions are contributed as a prepared and if circular contributions are contributed as a prepared and if circular contributions are contributed as a prepared and if circular contributions are contributed as a prepared and if circular contributed are contributed as a prepared and if circular contributed as a prepared and if circular contributed are contributed as a prepared and if circular contributed as a contributed

won.

The undersigned are prepared, and, if cir cumstances really demand, stand ready to establish by unanswerable proof every statement set forth in this memorial to your honorable bodies. Our request, in its essence, is, that no legislation whatever concerning reduction of duty on any class of steel be attempted during the present session of Congress.

Modern engineers who span the Ohio, th Hudson and Niagara with their massive an picturesque bridges, might well be amused a the longest bridge in the world," which wa completed on the 17th of June, 1786, when grand procession celebrated the event. The bridge was the first one which connected Boo ton with the mainland of Charlestown, and wa little more than a half mile in length. After the Revolution there was much talk about building a bridge to Charlestown, but it was deemed almost an impossibility from the gree depth of the water and the pressure of the le An ingenious shipwright named Cox, of Mystic insisted on the practicability of building th bridge, and succeeded, after much delay, in ol taining a charter, and the bridge was built The complete success of Mr. Cox in this great engineering feat was heralded abroad, and h received proposals from Ireland to build bridge over the Boyne at Londonderry. H took his Yankee workman with him, built th bridge to the satisfaction of his employers, an opened it, like the true Yankee he was, on the fourth of July, 1788, when a battle took place between his workmen and the Irish, which, bu for the prompt interference of the magistracy, would have been a very serious business.

AMERICAN EXPORTS OF IRON AND STEEL.

Statement of Domestic Exports of Iron and Steel, and Manufactures thereof, for th Calendar Years 1872 and 1873. Compiled for the American Iron and Steel Associa tion, at the Bureau of Statistics, Washington.

ARTICLES.	Quan	tity.	Val	ue.
	1872.	1873.	1872.	1873.
AGRICULTURAL IMPLEMENTS: Fanning Mills	25 26 6,636 24,781	120 43 9,882 27,008	\$689 7,876 765,511 320,493 607,509	\$4,330 5,726 1,266,761 368,462 868,703
Total			\$1,765,078	\$2,513,982
IRON, AND MANUFACTURES OF: Pig	5,365,035	6,579 2,238 6,705 1,893 12,274	\$72,818 31,929 5,041 86,820 13,781 144,653 97,090 101,959 774,296 89,556 166,554 3,160,538 322,879 2,737,588	\$414,349 40,404 14,519 30,743 7,108 201,459 196,438 101,397 1,109,482 125,037 254,290 3,011,111 371,663
Total			\$7,805,502	\$9,406,941
Ingots, Bars, Sheets and Wirelbs. Cutlery Edge Tools. Files and Saws. Muskets, Pistols, Rifles and Sporting			\$3,624 31,889 691,415 14,536	\$5,481 54,409 862,096 16,520
Manufactures of Steel not specified		****	1,165,424 317,735	1,548,227 236,265
Total			\$2,224,623	\$2,722,998
Scales and Balances. Sewing Machines. Fire Engines and Apparatus.			\$173,423 2,376,873 15,118	\$187,380 1,829,675 26,778
Grand Total			\$14,360,617	\$16,687,754

British Iron and Steel Exports.

for steel abroad, growing out of increased cost in production, the deductive probabilities are that a lowering of duties and a change in mode of levy would not cheapen steel to the mass of American consumers, even by the sixteenth of a cent per pound.

The British Board of Trade Returns for the two months ended February 28th and 1874, show a great falling off in the exports of iron and steel. The form the comparisons the comparison that the compa lowing are the comparisons

	. (Quantities.			Value.	
PRINCIPAL ARTICLES.	2 Month	s ended I	Feb. 28.	2 Month	is ended F	€b. 28.
	1872.	1873.	1874.	1872.	1873.	1874.
ARMS, AMMUNITION AND						
MILITARY STORES: Fire Arms (small)No. Gunpowdertbs. All other kinds£	59,806 $2,313,566$	62,074 2,693,973	38,101 2,394,458	64,610 55,090 63,608	71,178 69,037 41,987	58,013 68,886 83,837
BRASS, Manufactures of, not being Ordnance COPPER, Unwrought, in In-	8,728	8,829	15,627	42,929	50,503	97,479
gots, cakes or slabs:	7,190	7,219	9,689	30,510	33,283	43,605
To Germanycwt.	6,310	5,863	5,840	29,983	27,114	26,751
Belgium	6,816 7,429	2,994 $7,356$	4,108 4,666	29,000 33,069	14,278 33,338	18,655 $22,461$
United States	235	24,385	200	1,094	115,990	950
British India Other countries	1,467	2,012 $52,741$	3,233 783	6,870	9,487 13,503	14,797 3,603
Total	29,447	102,570	28,519	130,526	246,993	130,822
Wrought or Manufactured, unenumerated:						,
To Russiacwt.	1,909 756	2,164 1,142	$^{2,041}_{886}$	8,319 4,068	10,914 $5,795$	10,239 4,522
Germany	1,212	2,086	741	5,855	10,029	4,117
France	2,351	308	21	11,564	1,435	136
Italy Turkey	1,522 4,753	2,477 6,915	$\frac{1,382}{6,713}$	7,529 23,256	13,361 $34,506$	7,599 $33,962$
Egypt	1,902	2,626	2,929	9,467	13,440	15,012
United States	390 6,837	404 10,143	242 10,862	2,002 30,817	2,088 48,356	1,521
British India Other Countries	7,982	6,823	8,858	39,140	37,609	53,410 $47,896$
Total	29,614	35,088	34,675	142,017	177,513	178,364
Mixed or Yellow Metal Sheathingewt. HARDWARE and CUTLERY,	29,852	35,410	33,740	109,860	142,072	143,811
unenumerated.					44.000	0.000
To Russia£		****		5,559 51,418	11,853 50,617	8,653 43,696
Holland				14,646	13,935	15,105
France				26,816	22,807	18,780
Spain and Canaries United States		****		14,377 $151,356$	16,027 $150,705$	16,093 114,249
Spanish West India Islands				15,394	25,166	5,758
Brazil				46,119	51,698	42,521
Argentine Confedera-				33,088	33,436	24,152
British North America	****			6,601	1,616	2,506
' India		****		38,639 65,604	36,287 90,390	52,730 88,695
Australia Other Countries				223,436	260,574	216,222
Total£				693,053	765,111	649,155
IRON and STEEL: IRON: Pig,						
To Germany Tons	14,463	20,090	7,758	42,561	116,115	44,552
Holland	35,300 23,443	57,914	30,283 $14,653$	131,464 81,039	363,455 188,383	204,709 81,645
France	18,614	33,271 19,408	8,432	75,157	111,710	45,200
United States	22,897	19,110	10,205	87,768	119,385	58,709
British N. America Other Countries	632 19,635	$\frac{372}{22,697}$	161 13,991	3,818 72,055	2,220 144,877	960 76,366
		~~,001				
TotalTons Bar, Angle, Bolt and Rod	134,984	172,862	85,484	483,357	1,046,145	512,141
To Russia Tons	1,402	320	1 000	15,550	4,400	4,448
Germany	1,769 1,170	4,202 2,644	1,000	16,550 12,001	52,144 32,066	13,987 10,701
France	170	981	149	1,656	10,597	1,948
Italy	4,225	2,201	4,579	36,166	26,424	57,045
Turkey United States	631 13,570	788 8,097	1,964 868	5,667 122,498	9,773 $101,591$	23,742 14,968
CHIEGO GUALGOLARASA				6,406	3,994	7,038
British N. America.	697	347	544	0,400	17100 X	6 (0)0)03
	3,422 2,330	3,064 2,738	6,036 2,288	29,896 23,562	36,621 34,591	78,757 32,513

Total Tons

42,423

42,199

E	IR	OL	N E	CGE	•				1		19				
RON	AND ST	TEEL.			1	0		1	****	37 - 1	*				
				f, for the		Q	uantities.			Value.					
he Am	erican I	ron an	d Steel	Associa-	PRINCIPAL ARTICLES.	2 Months	s ended Fe	b. 23.	2 Months	ended Fe	eb. 28				
Quanti	ty.		Value).		1872.	1873.	1874.		1873.	1874.				
2.	1873.	1872	2	1873.	Railroad of all sor To Russia	160	6.816	6,524	3,134	77,582	91,547				
	1010.	2014		1010.	SwedenGermany	117 2,802	2,882 1,747	2,320 1,831	$\frac{2,401}{46,947}$	35,882 35,377	28,575 38,182				
05	190 250 44.000		Holland Belgium	1,110 1,333	1,912 3,529	1,258 $5,573$	12,601 36,970	32,297 69,262	91,793 98,938						
26	120 43	7	\$689 7,876	\$4,330	France	3,925	756 2,670	$\frac{665}{2,623}$	246 34,085	7,823 36,360	8,499 35,278				
3,636 1,781	9,882 27,008	320	5,511 0,493	1,266,761 368,462	ItalyAustrian Territories.	285 1,693	3,171 82	5,012	2,998 14,182	35,294 1,167	71,754				
			7,509	868,703	Egypt United States	3,766 88,430	$\frac{1,149}{48,901}$	8,894 $16,978$	37,880 768,102	15,740 592,676	111,269 219,016				
	100 400	\$1,76		2,513,982	Spanish West India Islands	607	1,492		5,100	17,266					
5,380	180,436 6,579	31	2,818 1,929	\$414,349 40,404	Brazil Peru	3,356 7,969	1,896 1,543	$\frac{3,351}{2,006}$	27,573 66,968	24,931 21,896	41,347 23,991				
603	2,238 6,705	86	5,041 6,820	14,519 30,743	Chili	158 2,137	436 859	3,818	2,057 22,387	6,726 10,372	44,120				
2,949	1,893	144	3,781 4,653	7,108 201,459	" India	1,612 2,559	3,333 2,598	6,153 $11,897$	14,227 28,607	60,876 37,566	85,010 176,692				
1,873	12,274	10:	7,090 1,959	196,438 101,397	Other Countries	9,173	5,479	17,418	78,835	71,083	214,479				
55 40	68 49		4,296 $9,556$	1,109,482 125,037	TotalTons Wire of Iron or Steel (ex-	131,209	91,551	96,311	1,205,300	1,190,166	1,310,420				
			6,554	254,290	cept Telegraph Wire), gal- vanized or notTons	4,825	5,011	3,952	81,764	109,985	90,947				
6,035 6	,818,671	329	0,538 2,879	3,011,111	Hoops, Sheets, and Boiler	2,040									
			7,588	3,528,941	and Armor Plates. To RussiaTons	666	995	588	7,748	15,582	11,250				
7 000	*O 022	\$7,80		\$9,406,941	Germany	1,525 1,241	4,021 2,036	522 1,091	17,812 16,650	57,700 ° 29,771	8,900 26,675				
7,062	52,277	3	3,624 1,889	\$5,481	France	648 734	1,407 832	268 1,046	6,908 8,852	26,393 12,432	5,923 16,890				
			1,415 4,536	862,096 16,520	Italy	1,806 4,998	1,320 5,352	1,303 1,022	21,186 56,531	19,404 85,696	22,872 19,589				
	****	1,16		1,548,227	British N. America India	267 3,504	86 1,979	149 3,897	2,983 42,207	1,477 33,957	2,435 66,106				
			7,735	236,265	Australia Other Countries	2,505 10,509	3,757 9,800	2,860 7,779	48,428 155,196	87,442 175,830	66,163 149,630				
	****	\$2,22		\$2,722,998	TotalTons	28,403	31,585	20,508	384,501	545,654	396,433				
	****	2,376	3,423 6,873	\$187,380 1,829,675	Tin Plates, To FranceTons	571	778	547	12,321	30,506	81,654				
			5,118	26,778	United States British N. America	11,946 451	15,468 117	18,524 153	319,792 11,438	492,195	564,438 4,743				
!	****	\$14,360	0,617 \$	16,687,754	Australia		1,024 3,446	646 3,124	25,462 78,193	37,257 119,006	21,098 100,027				
el Ex	ports.				TotalTons	16,790	20,833	22,994	447,206	682,944	708,960				
two	months	ended	Febru	ary 28th,	Cast or Wrought and all other Manufactures (ex-	10,700	20,000	22,001	411,200	002,011	100,000				
				The fol-	cept Ordnance unenu-										
					merated). To RussiaTons	498	3,611	403	11,356	36,008	10,110				
		v	alue.		Holland	2,754 2,436	2,541 2,478	1,432 $1,455$	38,342 43,292	57,981 40,160	38,314 35,030				
	-				France	768 1,311	791 1,093	472 1,071	16,022 21,926	20,928 $19,652$	13,769 $19,904$				
b. 28.	2 M	onths e	ended l	Feb. 28.	United States	2,760 2,088	$\frac{2,314}{2,430}$	4,357 437	47,993 23,406	56,429 41,773	80,414 $7,795$				
1874.	1872		873.	1874.	Brazil British N. America	1,413 928	1,901 146	1,184 154	23,500 10,350	35,246 $3,441$	$\frac{28,945}{3,970}$				
1014.	1012	-		1014.	British Possessions in South Africa	484	787	826	10,742	21,139	20,932				
38,10	01 64	610	71,178	58,013	British India	3,278 2,822	3,178 4,919	3,061 $5,842$	52,869 53,749	60,469 $102,757$	72,908 $110,694$				
,394,43	55,	090 608	69,037 41,987	68,886 83,837	Other Countries	15,092	10,724	11,077	212,388	219,590	219,555				
15,69		929	50,503	97,479	TotalTons Inon-Old, for remanu-	36,632	36,913	31,771	565,827	715,578	662,340				
20,0	1		00,000	01,210	facture. To United States. Tons	10,571	12,300	1,133	49,529	80,000	8,432				
9,68		510 983	33,283 27,114	43,605 26,751	Other Countries	1,343	1,448	1,734	7,447	9,276	10,963				
4,10	08 29,	,000	14,278 33,338	18,655	TotalTons	11,914	13,748	2,867	56,976	89,276	19,395				
3,2	00 1,		115,990 9,487	950	To FranceTons United States	3,826	529 3,373	$\frac{355}{1,922}$		20,844 $123,137$	-14,618 $-73,389$				
		,870	13,503		Other Countries	2,132	1,881	1,612		67,900	66,985				
28,5	19 130,	,526	246,993	130,822	TotalTons Manufactures of Steel or	6,364	5,783	3,889	206,645	211,881	154,992				
2,0	41 8.	319	10,914	10,239	Steel & Iron combined.	1,651	1,771	1,068	89,283	112,414	88,804				
8	86 4,	068 855	5,795 10,029	4,522	TOTAL OF IRON AND		400.000	201 220	0.044.000	F 224 400	1 000 000				
1,3	21 11,	564 529	1,435 $13,361$	136 7,599	STEELTons	415,195	422,256	301,328	3,914,602	5,221,693	4,370,807				
6,7	13 23	,256 ,467	34,506 13,440	33,962	Pig, Rolled, Sheet, Pip- ing and Tubing :										
	42 2,	002 817	2,088 48,356		To RussiaTons Germany	25 378	26 179	213 129	7,256	$\frac{614}{3,953}$	$\frac{4,915}{3,194}$				
8,8		140	37,609		France United States		137 1,136	512 301		2,850 $25,682$	$\frac{11,571}{7,403}$				
34,6	75 142,	,017	177,513	178,364	China British India			2,102 294		11,578 4,575	50,948 8,009				
33,7	40 109,	,860	142,072	143,811	Australia Other Countries		3911 1,109	288 1,014	6,657 26,992	8,554 26,026	7,058 26,001				
		,559	11,853	8,653	TotalTons		3,675	4,853			119,099				
	51,	,418 ,646	50,617 13,935	43,696	Steam Engines— To Russia£				35,791	16,368	9,273				
* *	26,	,816 ,377	22,807 16,027	18,780	Germany France	****			3,563	$45,870 \\ 6,690$	$\frac{50,020}{4,852}$				
	4 ** 4		150,705		Spain and Canaries Italy				4,651 $14,920$	15,128 22,074	8,795 $32,629$				
• •	40	,394 ,119	25,166 51,698		Egypt Brazil				106,383 11,270	37,477 14,111	24,048 $16,689$				
	0.0		51,698		British India Australia		* * * *		38,674 25,444	43,424 17,944	71,444 26,559				
	. 6	,088 ,601	33,436	2,506	Other Countries				114,372	176,211	210,421				
	65	,639 ,604	36,287 90,390 260,574	88,695	Total£			****	404,830	395,297	454,740				
	200		260,574		Other Descriptions— To Russia£				17,622	29,558	36,710				
* *	693	,053	765,111	649,155	Germany				85,490 45,804	140,118 64,554	140,196 76,025				
7,7			116,115		Belgium				41,356 70,101	54,062 103,688	70,023 82,377 73,255				
30,2 $14,6$	53 81	.039	363,455 188,383	81,645	France			****	25,262 38,120	45,225 16,950	28,979				
$\frac{8,4}{10,2}$	05 87.	,768	111,710 119,385	58,709	Egypt United States				70,614 38,578	102,921	14,825 43,201				
13,9	161 3,818 2,220 960			Australia				27,540	76,665 33,922 243,611	.139,010 50,509 274,701					
85.4	-	,357 1,	046,145		Other Countries			****	177,564 -638,051	911,274	274,701 - 959,788				
		.550	4,400		TELEGRAPHIC WIRES, and Apparatus conct'd there-			****	500,001	011,412	200,100				
	25 12	,550 ,001	52,144 32,066	10,701	with£	****	****		20,005	20,508	163,124				
4,5	79 36.	.656 .166	10,597 26,424	57,045	To RussiaCwt.	471 1,521	483 1,022	637 3,884	3,476 11,417	3,493 7,527	3,696 $23,032$				
	68 122			14,968	France	8,093 1,014	3,284 1,103	6,655 1,272	55,004	24,401 8,093	40,996				
6,0	36 29,	,406 ,896	06 3,994 96 36,621	3,994	3,994	3,994 36,621	36,621	7,038 78,757	United States	3,769	2,176	6,748 3,959	26,686	15,456 27,150	7,764 43,963 93,957
$\frac{2,2}{13,9}$,562 ,811	34,591 205,414		TotalCwt.	18,504		23,155	130,534	86,120	23,257				
32,4	84 393,	,743	517,655	431,425	PRODUCT OF GRANDS CORNER A STANK	17.075		10,244							

The Iron Age.

New York, Thursday, April 2, 1874.

DAVID	W	LLIA	M3					Publisher	and	Proprietor
JAMES	C.	BAYL	ES			0	0	Editor.		
TOHN :	S. H	ING	0	0	8	7		Business	Man	ager.

The Iron Age is published every Thursday orning, at No. 10 Warren Street, New York, on

SUBSCRIPTION.

Weekly Edition	84	a year
Issued every Thursday Morning. 'I'rade Reports for the week, brought	Con up to	tains fu

Semi-Monthly Edition. Issued the First and Third Thursday of every nonth. Contains a full Review of the Trade for the revious half month.

Monthly Edition...... \$1 a year. Issued the First Thursday of every month. Contains a full Review of the Trade for the previous

1.0	Weekly.	SCHIP MORELLY.	MODULITY.
Canada	\$4 40	\$2 40	\$1 24
Great Britain		3 00	1 50
France	6 00	8 00	1 50
Germany		4 00	2 00
Prassia	8 00	4 90	2 OC
Buenos Ayres.	8 00	4 00	2 OC
Peru	6 00	8 90	1 50
Belgium	., 8 00	4 00	2 00
Mexico		8 50	1 75
Sweden	12 00	6 00	8 00
New Zealand		4 00	2 00
Brazil	6 60	8 30	1 68

Workly Semi-Monthly Monthly

ADVERTISING.

. One square (12 lines, one inch), one insertion, \$2.50 one month, \$7.50; three months, \$15.00; six months \$2500; one year, \$4.000; payable in advance.
All communications should be addressed to

DAVID WILLIAMS, Publisher, 10 Warren St., New York.

EUROPEAN AGENCY.

CHARLES CHURCHILL & CO., American Merchants, 26 Wilson Street, Finsbury, London, England, will receive subscriptions (all postage prepaid by us) at the following prices in sterling: Great Britain and France, 25/; Germany, Prussia and Belgnum, 33/4; Sweden, 50/. They will also accept orders for advertisements, for which they will give prices on application.

City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering The from Age: also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in avery metance.

CONTENTS.

First Page.—An Improved Radial Drill. The Character of Metals as Exhibited by their Fracture. Artesian Wells in the Colorado Desert. Third Page.—Iron Domes.

Fifth Page. The Pipe Founding Trade in Glasgow. An Iron Works in Sweden. The Action of Acids upon Zinc.

Seventh Page.—Prospecting for Iron Ores. The Magnetic Metals. Ninth Page.—Business Items. The Labor Prob-lem at Ironton, Ohio. A Novelty in Cheap Trans-

Eleventh Page .- New Patents.

Fourteenth Page.—American and British Iron a Steel Exports. A Representative American Mehanic. Southerr. State Credits Abroad. The Tariff

Fifteenth Page.—American Exports of Iron and Steel. British Iron and Steel Exports. Sixteenth Page.—A Laboratory for Mechanical Tests of Iron.

petition with Great Britain.

the other hand, show a heavy falling off, locomotive building in 1834, soon becomtion. Although the shipments in February, rising firm of locomotive builders in Phila-1873, were smaller than for the correspond- delphia. ing month of 1872, those for February During this period Mr. Harrison designed 1874, show a falling off from 1873, which and built the locomotive Samuel D Ing-

items in proportion. The total exports of precedented feat in locomotive traction. iron and steel for the two months, show a falling off of 27 per cent. Were it not for of its most eminent engineers, Count Melthe small increase in tin plates the percent- nikoff and Col. Kraft, to the United States age of decrease would be still larger.

These figures are significant. If the time railroad system, with a view to its adoption. has not yet come for an effort to build up Attracted to the works of Eastwick & manufactures, it is not far off. Certainly the time is at hand for the putting forth Russia, recommended that Harrison be of every effort to cheapen the cost of iron a foreign market for our surplus. For St. Petersburg and Moscow Railroad, a line trade, and with her power to increase her events is steadily in the direction we have indicated.

A Representative American Mechanic.

It is rare in American life to notice the success of self made men, no matter what the position to which they may have attained, until after death has made their career a fit subject for history. Perhaps we err in thus failing to point out the success of the successful, but the avoidance comes from the feeling that with us energy, prudence and integrity will enable like success to be attained by all. The recent death of Joseph Harrison, of Philadelphia, affords an opportunity to point those struggling up from the workshop to the higher ranks of life, to a career which has rarely been surpassed, and which offers a ing of comparative totals for the years 1872 1810, and at fifteen years of age was apprenof iron and steel and manufactures there- failing within two years, left young Harri-December, 1873, was \$16,687,754, against becoming a journeymen, he worked at his \$14.360,617 for 1872, an increase of \$2,327,- trade until 1833 or '34, when he was sent has been a falling off, but in most articles ery for Amadeus Tiers, of the Point of export the increase is greater than was Pleasant Foundry, Kensington, in which expected. In agricultural implements the his father was for many years bookkeeper. increase is 42 per cent.; in iron and manu- At this time locomotive building had befactures of iron, 21 per cent.; in steel and gun to attract attention, and a shop was the total exports, 16 per cent. This is cer- present water works, by a Col. Long, for tainly a very satisfactory showing, and one this business. The late M. W. Baldwin, which gives ample confirmation of our oft founder of the Baldwin Locomotive Works, expressed opinion that it is possible to had previously engaged in the business, build up a great and profitable export trade and others were embarking in it. Long in iron and manufactures of iron in com- and William Norris, of Philadelphia, were associated at this time, and in their shop The British Board of Trade returns, on Joseph Harrison commenced his career of and indicate that the iron trade of that ing foreman, and in 1835 was engaged as country is in a very unsatisfactory condi- foreman by Garrett & Eastwick, a new and

is regarded with alarm by the English ham, for the Beaver Meadow Railroad ents for improvement by the inven- of their resources. Our correspondent tells Australia are purchasing more liberally weight of the locomotive on the driving this year than last in the British markets; wheels was patented by Harrison, in 1839, but Belgium, Holland and British North and the style of eight wheeled engine with America appear with the United States on four driving and four truck wheels, now althe other side of the account. In pig iron most exclusively used, was adopted. In 1841 pared with the first two months of 1873, & Mary for the Reading Railroad Comis very great-about 50 per cent.; in bar pany, which drew one hundred and one and rolled iron 23 per cent., and in other loaded coal cars over the road, then an un-In 1840 the Russian government sent two

to examine and report upon the American

gines, these officers, on their return to

sent for to undertake the construction of

columns, we believe England can never gineering charge of Major George W. regain ground she is losing. With the Whistler, an American, called to Russia in and in twelve years from the first date, a opment of its resources, nothing but misgrowth of the demand for iron in countries 1842 as consulting engineer of the railway hitherto exclusively supplied from British department of the Russian government. markets, other sources of production must In 1843 Mr. Harrison sailed for Russia, be drawn upon, and the orders will natu- and in December of the same year, rally come here. England is our only in connection with his partner, Mr. Eastformidable competitor for the world's iron wick, and Thos. Winans, of Baltimore, for a work of three millions of dollars sentatives as will lead them to make provicontracted with the Russian government production definitely limited, it is evident for the work, for the sum of \$3,000,000, a look back on eighteen years of equal opporthat our own vast and varied resources condition being that Russian workmen must soon be drawn upon to supply the only should be employed, when practic It was not good luck or fortuitous circumever increasing requirements of non-pro- cable. This contract led to a subsequent ducing countries. So, at least, we believe, one of equal amount, both being successand the statistics to which reference is fully carried out. A contract was then made above, show that the tendency of made for the maintenance of the St. Pe patient study, and by the same means matured coupons, which are not even now tersburg and Moscow Railroad in rolling cluded in 1862, to the entire satisfaction of Constantine, Prince Paskewit, brother of and after spending several hours in exam-\$3000. In 1850 further honors were conferred on Harrison, on the completion of written. the bridge over the river Neva, the Czar personally decorating him with the ribbon of the Order of St. Anne and with a massive gold medal. The magnitude of this work in Russia, conducted entirely by Recenteenth Page.—Trade Report (concluded).

Mineteenth Page.—Trade Report (concluded).

The state of the page Americans with a personnel of laborers Statistics, makes a very satisfactory show- follows. He was born in Philadelphia in Iron Worker, now well known through steel engraving copy. This painting is iland 1873. The total value of our exports ticed to a machinist in Kensington, who lustrative of a Hebrew legend, and shows a brawny smith occupying Solomon's of, for the calendar year ended with son to finish his trade elsewhere. After throne, at the completion of the temple, to which the King had invited all the artificers engaged in its construction, and de-137 In some of the items specified there to Port Clinton, Pa., to erect some machin. fended the smith in thus enforcing the dignity of his art by occupying the throne itself. This legend had always been fresh in the mind of Harrison from boyhood. and when wealth permitted he procured its painting, as in keeping with the trade manufactures of steel, 18 per cent.; and in started near Fairmount, the site of the to which he owed success and of which he was always proud. The latest invention of Mr. Harrison, after his return to Philadelphia and when wealth and position would have prompted most men to seek ease, was the Harrison Safety Steam Boiler, which he considered, after many years of study and experiment, the best and most economical method of generating steam safely. This boiler, as is well known, consists of a series of small cylinders or was put in operation in 1859, at the

value. How many skilled workmen can tunity and not confess their lack of success. stance that brought the Russian contract, the day, attained only by hard work and within the reach of every mechanic. It is great wealth earned by Mr. Harrison, by the Emperor Nicholas, the Grand Duke himself far less than on his mechanical by the foreign holders of State securities. success; but it is by following such exthe present Emperor, and other dignitaries, amples that mechanics may elevate themselves, advance their profession and add ining the work, explained to them by the honor and dignity to their country. For Foreign Bondholders." That it will do former Philadelphia apprentice, the Czar this purpose and not to venerate the man, sketch of Joseph Harrison, Jr., been

Southern State Credits Abroad.

We have received the following communication from a prominent iron master of the South

running to some other unimaginary point, and yet getting their \$10,000 per mile, with not one dime spent upon the lines. Yet, with all this load upon her, she has risen from her prostrate condition, shaken off the incubus that was hanging upon her, and with what result? In the first place she has not repudiated \$1 of her legitimate indebtednes, and her bonds stand to-day, quoted at the N. Y. Stock Board, at from 90 to 95 cents on the dollar, which, taking the facts into consideration that they are as fully appreciated, or nearly sc, as those of any other State of the Union; and any person owning a coupon, or any number of them, falling due the first of July next, can have the money for the same at any time by sending them. money for the same at any time by sending then to the State treasurer at Nashville, he deducting to the State treasurer at Nashville, he deducting only 6 per cent. Per annum from the moment they reach his hands up to the first of July. These facts, I certainly think, speak for themselves, and do not warraut the conclusion that you and the "council of foreign bondholders" have arrived at. God knows, we fully admit that "our crimes are great," or are so, at least, in the minds of the Northern people; yet do give us a little credit when we deserve it, and don't continue to cry war! war! long after the don't continue to cry war! war! long after the hatchet is buried, our debts being paid, and we are minding our own business. are minding our own business. VULCAN.

in our issue of March 19th concerning the 'Council of Foreign Bondholders," we were influenced solely by a desire to call globes connected by pipes, and the first the attention of the people of some of the Southern States to the necessity of doing contrary, the duties collected on all the foreign works of William Sellers & Co. It something to prevent the disappointment was first patented in 1859, and since has of their reasonable hopes of obtaining States, and classified within the range of values been several times the subject of pat- foreign capital to assist in the development from below 7 to above 11 cents per pound, for

trade journals. In some items the decline Company. This engine had many novel tor. At the London International Ex- us that not a dollar of the legitimate in is equal to 40 per cent., and the total is, at points, the principal of which was the hibition, 1862, this boiler received the debtedness of the State of Tennessee has least, 40 per cent, below that for February, method of reversing, the invention of highest class medal for "originality of de been repudiated. This is true. The law 1872. This is due chiefly to the falling Andrew Eastwick, of this firm. In 1837, sign and general merit." With his fond- passed by the legislature in March, 1873, off in the requirements of the United at twenty-seven years of age, Harrison be ness for art Mr. Harrison was constantly provided for the funding of all outstand The shipments to the United came a partner in the firm of Garrett, East- doing liberal kindnesses to artists. Some ing legally issued bonds, due or to become States for the month of February com- wick & Co., investing his skill against the fifteen years ago he commissioned the due before January 1st, 1874, as well as all pare as follows: 1872, 53,131 tons; 1873, capital of the concern. This firm was venerable artists Rembrandt Peale and past due coupons and coupons maturing 21,063 tons: 1874, 9,543 tons. Russia, soon changed to Eastwick & Harrison. Thomas Sully each to paint the portrait of on or before January 1st, 1874, in a 10-40 Sweden and Norway, Germany, Italy, During the existence of Garrett, Eastwick the other, and when the work was finished, six per cent. bond, bearing interest from Egypt, Brazil, Peru, Chili, India and & Co., the present mode of equalizing the invited the two artists to his house with a July, 1874. A letter from the State treaslarge company to greet them, a courtesy urer, which we have seen, says that particularly agreeable to these celebrated the money to pay the interest is ready, or painters, both then over 80 years of age. will be by the time it is needed. So far as A prominent director of the Academy of we know, the only bonds rejected are those Fine Arts, he sustained by his purchases of the "Mineral Home Railroad," to the the decrease for the two months, as com- this firm built an engine called the Gowan many of our American artists, and contrib- amount of \$100,000, and of the "Insurance uted largely to the Fairmount Park Art Company of the Valley of Virginia" to the Association. A ready and practical writer amount of \$20,000. Probably this action on cognate subjects. Mr. Harrison was an could not have been taken sooner than it occasional contributer to the scientific was, and we see no reason why Tennessee periodicals, and in 1872 wrote a book, en. should be looked upon with especial distitled "The Locomotive Engine, and Phila- favor by foreign investors and capitalists ; delphia's Share in its Early Improvements." but the fact remains that the "Council" Without a literary education, he was a terse have warned the British people against and forcible writer, indicating his charac- Tennessee investments, and the probabiliter as clearly with his pen as in his ties are that the securities of that State an export trade in American iron and iron Harrison by the reputation of their en- machinery. The life of this man is will not be regarded with much more surely an example to every American favor abroad until it is certain that the mechanic of the possibilities before him. Treasury will be able to continue paying The success here attained was not due interest on the debt as funded. But, be production, to the end that we may make the locomotives and rolling stock of the to especial ability or natural genius, but this as it may, if a State credit is the result of patient, persevering industry destroyed abroad, or so weakened as to reasons before given in detail in these of .400 miles then projected under the en in one pursuit. Five years after entering discourage or prevent the investment of on his apprenticeship he was a foreman, the foreign capital necessary for the develpartner whose skill was considered an chief would result from concealing the equivalent against capital, and three years fact. The people of those States should later on, in eighteen years after his first know what is said and thought of them start as a boy, he is contracting with one of abroad, to the end that they may bring the most powerful governments of the world such influence to bear upon their repre sion for the payment of all outstanding liabilities at the earliest practicable moment. The fact that Tennessee has taken a step in the right direction, and that it promises hereafter to protect its securities. -it was the best locomotive-making skill of should, we admit, be accepted as making some amends for the delay in paying the to be paid, as we understand it, but to be stock for twelve years, which was con- not accorded to every man to amass the funded as part of the State debt. This is, of course, a great deal better than repudithe government. In 1847 the works of who leaves an estate valued at seventeen ation, but we can readily understand why Harrison, Winans & Eastwick were visited millions of dollars, and on which he prided it should be regarded with dissatisfaction

> much to discourage English investments in sent each of the firm a diamond valued at whose life was his best praise, has this certain of our Southern States, no one knows so well as those who have tried, and are now trying, to negotiate American coal and iron property in London. We are sorry the report was ever issued, doubly sorry that it should have any basis of truth to rest upon: but we are not sorry we laid the subject fairly and impartially before our readers in the South, with such wise and friendly counsel as we were able to give. No reader of The Iron Age can justly accuse us of ever manifesting a desire to revive the bitter memories of the war. Such influence as we have has been freely given in aid of all legitimate industrial enterprises in the South, and we believe the time is not very far distant when a large proportion of the iron produced in the United States will be made south of the Potomac and the Ohio; but no one will deny that foreign capital is needed for the rapid development of the mineral resources of that section, and that, for the present, the chances are against their getting it; and we should neglect our duty did we fail to urge the importance of such action as may be needed to restore and strengthen South ern credits in the foreign money markets.

It is useless to disregard, or disparage the

importance and influence of, such a docu-

ment as the report of the "Council of

The following strong memorial from the steel consumers and steel manufacturers of the coun try, who are satisfied with the present duties on imported steel, is being numerously signed,

and will be presented to Congress next week The undersigned, consumers of steel, and manufacturers of steel and steel products in various forms, respectfully memorialize your honorable bodies to maintain to the fullest extent the existing law for the protection of our common interests. We beg you to consider that the propositions made to change or abolish these laws affect not only our own prosperity, but our very existence in many departments of industry, and also, through us, that general prosperity of the country through which alone the foreign trade itself can be maintained.

A small and exceptional class of steel consumers claim, in a petition already, or soon to be, laid before your honorable bodies, that the natural growth of their business is "greatly In presenting the facts which appeared hindered by the enormous and excessive tax now levied on steel of foreign manufacture.' But these petitioners certainly do not comprehend, neither do they truly represent, the facts of the case, which do not disclose any actual grievance nor any ground for just complaint. On the steel entered into consumption in the United

the eleven months ended June 30, 1873, embrac ing the whole period of that fiscal year under the reduced tariff, amounted to an ad valorem of almost exactly 83 per cent.; whereas the aggregate duties collected on all dutiable goods for the fiscal year, averaged ad valorem, were equivalent to 38 07 per cent., showing that the steel specified was subject to 5 per cent. less duty than the general mass of dutied imports Further, taking the total of steel and manufac tures of steel imported during the said eleven months, the average ad valorem rate was 37:11 per cent., and 37.51 per cent. for the whole fiscal year; thus evidencing that steel, classified within the range of values from below 7 to above 11 cents per pound, was admitted at some 4 per cent. less than the general average for steel and steel products of all kinds. Nor is this all; for, of the steel classified as stated, the lowest grade paid duty for the elever months at the rate of 391/2 per cent., while the higher grade paid at the rate of 27% per cent. and the highest grade at the rate of 33% per cent., proving that the most expensive classes of unwrought steel are subjected to lower en try charges than the cheapest class; yet the petitioners named claim to find their grievance the lower charges. We respectfully submit whether these unquestionable facts sustain, in the smallest degree, the charge that the existing duties are "enormous and excessive."

The aforesaid petitioners, in making their appeal to your honorable bodies, call your atten tion to "the important position occupied by the manufacturers of agricultural and mechanical implements, consumers of foreign steel in the United States." In return, we would ask your attention to a fact, almost notorious throughout the steel trade, that an insignificant fraction of the steel consumed by the manufacturers of agricultural implements is of foreign make, but that the bulk of quantity is of American production; while of the other classes who consume foreign steel, either in part or in whole, nearly every one who produces largely enjoys a considerable export demand for his products. We would further ask consideration for the fact that these manufacturers, as a class, engross the markets of the United States, to the almost entire exclusion of their

ld

en

ng

di. hy on he cu-

ın nd oal

are ith aid

ely the

and

ith

teel

ities ned.

and is in

your ex-

our

deile rity. sof

ieral

lone

con-n to

t the eatly e tax

pre-cts of

rievnthe

reign

nited

alues

, for

American consumers, even by the sixteenth of a cent per pound.

Moreover, we respectfully represent that the claim of the aforesaid petitioners for reduction of duty does not state the facts correctly on the important point of exporting American manufactures made in part of foreign steel. By the Act of June 6, 1872, the privilege of drawback, or of full refund of all duties paid, less 10 per cent., was extended to shovels, spades, fire arms, scales, balances, axes, hammers, hatchets, &c., one-half of the materials of which is imported; and this exemption is fully realized by most New England manufacturers. Indeed, nearly all who manufacture for export have for years received a full refund of all duties paid, upon shovels and axes particularly. To these leading manufacturers steel has been and is practically free of duty, so that their allegation that the export of articles "into which foreign steel enies as a chie? component part," is prevented or obstructed by the turiff acts, is simply untrue. In actual practice, this refund of the untrue. In actual practice, this refund of the

duiv on such articles is largely and liberally made.

The request made by the aforesaid petitioners, that the invoice foreign price paid by bona flde purchasers be recognized as the dutiable value by the appraisers at the United States ports of entry (without regard to the real market value), would be utterly subversive of the principle involved in the present system of levying duties, and would practically result in entering all classes of goods for import (on which ad valorem duties are imposed) at prices less than their true market value.

Finally, the request of the aforesaid petitioners, that "the system of taxation shall be changed from the present assessment ad valorem to a specific rate," should, in the opinion of the undersigned, be disregarded. We are content with the duties as at present levied. With all the imperfections of the existing plan, we, as well as the government, are likely to be better off than under some new and untried scheme, whose results are as yet purely theoretic and partly conjectural. A specific duty, fully divorced from the ad valorem principle, could be adopted only at the expense of American producers of steel. Within such a level range of entry charge, production on our soil would find help where it has already won the victory, and encounter reinforcement of our foreign competitors where the victory is yet partially to be won.

The undersigned are prepared, and, if cir-

won.

The undersigned are prepared, and, if circumstances really demand, stand ready to establish by unanswerable proof every statemen set forth in this memorial to your honorabl bodies. Our request, in its essence, is, that me legislation whatever concerning reduction of duty on any class of steel be attempted during the present session of Congress.

Modern engineers who span the Ohio, the Hudson and Niagara with their massive an picturesque bridges, might well be amused "the longest bridge in the world," which w completed on the 17th of June, 1786, when grand procession celebrated the event. Th bridge was the first one which connected Bo ton with the mainland of Charlestown, and w little more than a half mile in length. After the Revolution there was much talk about building a bridge to Charlestown, but it was deemed almost an impossibility from the gre depth of the water and the pressure of the ic in the winter, beside the injury to navigatio An iugenious shipwright named Cox, of Mystle insisted on the practicability of building the bridge, and succeeded, after much delay, in o taining a charter, and the bridge was buil The complete success of Mr. Cox in this gre engineering feat was heralded abroad, and l received proposals from Ireland to build bridge over the Boyne at Londonderry. H took his Yankee workman with him, built th bridge to the satisfaction of his employers, an opened it, like the true Yankee he was, on the fourth of July, 1788, when a battle took place between his workmen and the Irish, which, br for the prompt interference of the magistracy, would have been a very serious business.

AMERICAN EXPORTS OF IRON AND STEEL.

Statement of Domestic Exports of Iron and Steel, and Manufactures thereof, for th Calendar Years 1872 and 1873. Compiled for the American Iron and Steel Associa tion, at the Bureau of Statistics, Washington.

[ARTICLES.	Quan	tity.	Val	ue.
	1872.	1873.	1872.	1873.
AGRICULTURAL IMPLEMENTS:	*************			
Fanning MillsNo.	25	120	\$689	\$4,330
Horse Powers	26	43	7,876	5,726
Mowers and Reapers	6,636	9,882	765,511	1,266,761
Plows and Cultivators	24,781	27,008	320,493	368,462
All others not Specified			607,509	868,703
Total			\$1,765,078	\$2,513,982
PigCwt.	26,380	180,436	\$72,818	\$414,349
Bar	5,896	6,579	31,929	40,404
Boiler Plate	603	2,238	5,041	14,519
R. R. Bar or Rails	21,644	6,705	86,820	30,743
Sheet, Band and Hoop	2,949	1,893	13,781	7,108
Castings not Specified			144,653	201,459
Car Wheels	4,873	12,274	97,090	196,438
Stoves and Parts of			101,959	101,397
Steam Engines, Locomotive No.			774,296	1,109,482
" Stationary	40	49	89,556	125,037
Boilers for Steam Engines, separated				
from Steam Engines			166,554	254,290
Machinery not specified	P 005 005	0.010.021	3,160,538	3,011,111
Nails and Spikes	5,365,035	6,818,671	322,879	371,663
All other Mfrs. Iron not specifiedlbs.			2,737,588	3,528,941
Total Steel and Manufactures of			\$7,805,502	\$9,406,941
Ingots, Bars, Sheets and Wirelbs.	17,062	52,277	\$3,624	\$5,481
Cutlery			31,889	54,409
Edge Tools			691,415	862,096
Files and Saws			14,536	16,520
Muskets, Pistols, Rifles and Sporting			4 105 101	4 540 2000
Guns			1,165,424	1,548,227
Manufactures of Steel not specified			317,735	236,265
Total			\$2,224,623	\$2,722,998
SCALES AND BALANCES			\$173,423	\$187,380
SEWING MACHINES			2,376,873	1,829,675
FIRE ENGINES AND APPARATUS			15,118	26,778
Grand Total			\$14,360,617	\$16,687,754

European rivals; and that, with advanced prices for steel abroad, growing out of increased cost in production, the deductive probabilities are that a lowering of duties and a change in mode of levy would not cheapen steel to the mass of American consumers, even by the sixteenth of a cent per pound.

Moreover, we respectfully represent that the

	* (Quantities.			Value.	
PRINCIPAL ARTICLES.	2 Month	s ended 1	Feb. 28.	2 Month	s ended F	€b. 28.
	1872.	1873.	1874.	1872.	1873.	1874.
ARMS, AMMUNITION AND			i			
MILITARY STORES: Fire Arms (small)No. Gunpowderlbs.	59,806 2,313,5 6 6	62,074 2,693,973	38,101 2,394,458	64,610 55,090	71,178 69,037	58,013 68,886
All other kinds£ Brass, Manufactures of, not being Ordnance	8,728	8,829	15,627	63,608 42,929	41,987 50,503	83,837 97,479
COPPER, Unwrought, in In-	-,			,		
gots, cakes or slabs: To Germanycwt.	7,190	7,219	9,689	30,510	33,283	43,605
Holland Belgium	6,310 6,816	5,863 2,994	5,840 4,108	29,983 29,000	27,114 14,278	26,751 18,655
France	7,429	7,356		33,069	33,338	22,461
United States	235	24,385	200	1,094	115,990	950
British India Other countries	1,467	2,012 $52,741$	3,233 783	6,870	9,487 $13,503$	14,797 $3,603$
Total	29,447	102,570	28,519	130,526	246,993	130,822
Wrought or Manufactured, unenumerated:						
To Russiacwt.	1,909	2,164	2,041 886	8,319	10,914	10,239
Holland	756 1.212	1,142 2,086		4,068 5,855	5,795 10,029	4,522 4,117
France	2,351	308	21	11,564	1,435	136
Italy	1,522 4,753	2,477 $6,915$	1,382 6,713	7,529 23,256	13,361 $34,506$	7,599 $33,962$
Turkey	1,902	2,626		9,467	13,440	15,012
United States	390	404	242	2,002	2,088	1,521
British India	6,837 7,982	10,143 6,823	10,862 8,858	30,817 39,140	48,356 $37,609$	53,410 $47,896$
	29,614	35,088	34,675	142,017	177,513	178,364
Mixed or Yellow Metal						
Sheathing	29,852	35,410	33,740	109,860	142,072	143,811
unenumerated. To Russia£				5,559	11,853	8,653
Germany				51,418	50,617	43,696
Holland	****		****	14,646	13,935	15,105
France				26,816 14,377	22,807 $16,027$	18,780 16,093
Spain and Canaries United States		****		151,356	150,705	114,249
Spanish West India Islands				15,394	25,166	5,758
Brazil				46,119	51,698	42,521
tion				33,088	33,436	24,152
British North America	****			6,601 38,639	1,616 36,287	2,506 $52,730$
" India				65,604	90,390	88,695
Other Countries	****	****		223,436	260,574	216,222
Total£				693,053	765,111	649,155
Iron : Pig, To GermanyTons	14,463	20,090	7,758	42,561	116,115	44,552
Holland	35,300	57,914	30,283	131,464	363,455	204,709
Belgium	23,443 18,614	33,271 19,408		81,089 75,157	188,383 111,710	81,645 45,200
United States	22,897	19,110	10,205	87,768	119,385	58,709
British N. America Other Countries	632 19,635	372 22,697		3,313 72,055	2,220 144,877	960 76,366
TotalTons Bar, Angle, Bolt and Rod					1,046,145	512,141
To Russia Tons	1,402			15,550	4,400	4,448
Germany	1,769 1,170			16,550 12,001	52,144 32,066	13,887 10,701
France	170			1,636	10,597	1,948
Italy	4,225			36,166	26,424	57,045
Turkey United States	631 13,570	788 8,097		5,667 122,498	9,773 101,591	23,742 $14,968$
British N. America.	697	347		6,406	3,994	7,038
" India	3,422	3,064	6,036	29,896	36,621	78,757
Australia	2,330 13,217			23,562 123,811	34,591 205,414	32,513 $186,278$
Other Countries	13,217	16,817		123,811	205,414	186,278

Total Tons

42,423

42,199

E	IR	OI	1 A	GE	•						15
RON	AND S	PEEL.									
				f, for the		Q	uantities.			Value.	
				Associa-	PRINCIPAL ARTICLES.	2 Months	ended Fe	b. 23.	2 Months	ended Fe	b. 28.
Quanti	ity.		Valu	e.		1872	1873.	1874.		1873.	1874
		-			Railroad of all sor						
2.	1873.	187	2.	1873.	To Russia	160 117	6,816 2,882	6,524 $2,320$	3,134 2,401	77,582 35,882	91,547 $28,575$
					Germany	$\frac{2,802}{1,110}$	1,747 1,912	1,831 1,258	$\frac{46,947}{12,601}$	35,377 32,297	$\frac{38,182}{21,728}$
25 26	120 43				Belgium	1,333	3,529 756	5,578 665	36,970 246	69,262 7,823	98,938 8,499
3,636 1,781	9,882 27,008	76	5,511 20,493	5,726 1,266,761	Spain and Canaries Italy	$\frac{3,925}{285}$	2,670 $3,171$	2,623 $5,012$	$\frac{34,085}{2,998}$	36,360 35,294	35,278 71,754
	21,000		7,509	368,462 868,703	Austrian Territories. Egypt	1,693 3,766	1,149	8,894	$\frac{14,182}{37,880}$	1,167 $15,740$	111,260
		\$1,76	5,078	\$2,513,982	United States Spanish West India	88,430	48,901	16,978	768,102	592,676	219,016
3,380 5,896	$180,436 \\ 6,579$		2,818 31,929	\$414,349	Islands	607 3,356	1,492 $1,896$	3,351	5,100 $27,573$	17,266 $24,931$	41,347
603	2,238 6,705		5,041	40,404 14,519 30,743	Peru	7,969 158	1,543 436	$\frac{2,006}{3,818}$	66,968 $2,057$	21,896 $6,726$	23,991 $44,120$
2,949	1,893	1 1	13,781 14,653	7,108	British N. America.	2,137 1,612	859 3,333	6,153	22,387 14,227	10,372 $60,876$	85,010
1,873	12,274	9	07,090 01,959	201,459 196,438 101,397	Australia Other Countries	2,559 9,173	2,598 $5,479$	11,897 17,418	28,607 78,835	37,566 71,083	176,692 214,479
55 40	68 49	77	74,296 39,556	1,109,482	TotalTons	131,209	91,551	96,311	1,205,300	1,190,166	1,310,420
40	24		36,554	125,037 254,290	Wire of Iron or Steel (ex- cept Telegraph Wire), gal-						
025 6	3,818,671	3,10	30,538 $22,879$	3,011,111	vanized or notTons	4,825	5,011	3,952	81,764	109,985	90,947
	,010,011		37,588	371,663 3,528,941	Hoops, Sheets, and Boiler and Armor Plates.			1			
!		\$7,80	05,502	\$9,406,941	To RussiaTons Germany	666 1,525	995 4,021	588 522	7,748 17,812	15,582 57,700	11,250 8,900
7,062	52,277		3,624	\$5,481	Holland	1,241 648	2,036 1,407	$^{1,091}_{268}$	16,650 6,908	29,771 26,393	26,675 5,923
		69	31,889 31,415	54,409 862,096	Spain and Canaries.	734 1,806	832 1,320	1,046 1,303	8,852 21,186	12,432 19,404	16,890 $22,872$
			14,536	16,520	United States British N. America	4,998 267	5,352 86	1,022 149	56,531 2,983	85,696 1,477	19,589 2,435
			35,424 17,735	1,548,227 236,265	" India	3,504 $2,505$	1,979 3,757	3,897 2,860	42,207 48,428	33,957 87,442	66,106 66,163
		\$2,22	24,623	\$2,722,998	Other Countries	10,509	9,800	7,779	155,196	175,830	149,630
			73,423	\$187,380	TotalTons Tin Plates,	28,403	31,585	20,508	384,501	545,654	396,433
			76,873 15,118	$\begin{array}{c c} 1,829,675 \\ 26,778 \end{array}$	To France Tons	571 11,946	778 15,468	547 18,524	12,321 319,792	30,506 $492,195$	81,654 564,438
		\$14,36	30,617	16,687,754	United States British N. America	451	117	153 646	11,438	3,980 37,257	4,743 21,098
					Australia Other Countries	$\frac{886}{2,936}$	$\frac{1,024}{3,446}$	3,124	25,462 78,193	119,006	100,027
el Ex	ports.				TotalTons	16,790	20,833	22,994	447,206	682,944	708,960
				uary 28th,	Cast or Wrought and all other Manufactures (ex-						
e exp	orts of i	ron an	d steel.	The fol-	cept Ordnance unenu- merated).						
	T				To RussiaTons Germany	498 2,754	3,611 2,541	403 1,432	11,356 38,342	36,008 57,981	10,110 $38,314$
		,	Value.		Holland	2,436 768	2,478 791	$\frac{1,455}{472}$	43,292 16,022	40,160 $20,928$	35,030 13,769
b. 28.	b. 28. 2 Months ended Feb. 28.		Feb 20	Spain and Canaries United States	1,311 2,760	1,093 2,314	$\frac{1,071}{4,357}$	21,926 47,993	19,652 $56,429$	19,904 $80,414$	
0. 20.		tonths	ended	F & D. 20.	Peru	2,088	2,430 1,901	437 1,184	23,406 23,500	41,773 35,246	7,795 $28,945$
1874.	1872	2.	1873.	1874.	Brazil British N. America British Possessions in	928	146	154	10,350	3,441	3,970
			-	South Africa British India	484 3,278	787 3,178	826 3,061	10,742 52,869	21,139 60,469	20,932 72,908	
38,1		610	71,178	58,013	Australia	2,822 15,092	4,919 10,724	5,842 11,077	53,749 212,388	102,757 219,590	110,694 $219,555$
,394,4		,090 ,608	69,037 41,987					81,771	565,827	715,578	662,340
15,6		929	50,508		TotalTons Iron-Old, for remanu-	36,632	36,913	01,111	000,021	110,010	002,010
			,		facture. To United States. Tons	10,571	12,300	1,133	49,529	80,000	8,432
9,6 $5,8$,510 ,983	33,280 27,114		Other Countries	1,343	1,448	1,734	7,447	9,276	10,963
4,1	08 29	,000	14,278	8 18,655	TotalTons			2,867	56,976	89,276	19,395
	00 1	,094	115,996 9,48	950	To FranceTons United States	3,826	3,373	355 1,922	14,525 122,822	20,844 $123,137$	14,618 73,389
		,870	13,50		Other Countries	2,132	1,881	1,612	69,928	67,900	66,985
28,5	130	,526	246,99	130,822	TotalTons Manufactures of Steel or		5,783	3,889	206,645	211,881	154,993
0.0		210	10.01	10.000	Steel & Iron combined.	1,651	1,771	1,068	89,283	112,414	88,804
	86 4	,319 ,068	10,914 5,790	4,522	TOTAL OF IRON AND						
	21 11	,855 ,564	1,43	136	STEELTons		422,256	301,328	3,914,602	5,221,693	4,375,857
1,3 6,7	13 23	,529 $,256$	13,36 $34,50$	33,962	Pig, Rolled, Sheet, Pip- ing and Tubing :						
	42 2	,467 $,002$	13,440 2,080	8 1,521	To RussiaTons Germany	25 378	26 179	213 129		614 3,953	4,915 $3,194$
10,8		,817 $,140$	48,356 $37,609$		France United States	87	137	512 301	1,650 26,383	2,850 25,682	11,571 7,403
34,6	75 142	,017	177,513	178,364	China	3,464	523	2,102 294	64,931	11,573 4,575	50,948 8,009
33,7	40 109	,860	142,075	143,811	British India	344	391		6,657	8,554	7,058 26,001
					Other Countries		-			26,026 83,827	119,099
	51	,559 $,418$	11,853 50,61	7 43,696	TotalTons Steam Engines— To Russia£				35,791	16.368	9,273
		,646 ,816	$\frac{13,93}{22,80}$		Germany	****	11.21		49,762	45,870	50,080
	14	$\frac{377}{356}$	16,02 $150,70$	7 16,093	Spain and Canaries.			h	3,563 4,651 14,920	6,690 15,128 22,074	8,795 32,629
		,394	25,16		Egypt	****		****	106,383	37,477	24,048
		,119	51,69		Brazil British India				11,270 38,674	14,111 43,424	16,689 71,444
		1,088 1,601	33,43 1,61		Australia Other Countries				25,444 114,372	17,944 $176,211$	26,559 $210,421$
	38	,639 ,604	36,28 90,39	7 52,730	Total£				404,830	395,297	454,740
		3,436	260,57		MACHINERY & MILLWORK Other Descriptions—						
	698	,053	765,11	649,155	To Russia			****	17,622 85,490	29,558 $140,118$	36,710 140,196
	27.0	501	116 11	3 44.550	Holland		1 7 4 4	****	45,804 $41,356$	64,554 54,062	76,025 82,377
30,3	283 131	,464 ,464	116,11 363,45	5 204,709	FranceSpain and Canaries.			****	70,101 25,262	$\frac{103,688}{45,225}$	73,255
	138 75	,089	188,38	0 45,200	Egypt United States	4.4	****	****	38,120 70,614	16,950 102,921	
	161	,768 3,313	119,38	960	British India				38,578 27,540	76,665 33,922	.139,010
13,9		,055	144,87		Other Countries		****		177,564	243,611	274,701
85,4	1		1,046,14		Total£				638,051	911,274	959,788
1,0	000 16	,550 ,550	$\frac{4,40}{52,14}$	4 13,987	TELEGRAPHIC WIRES, and Apparatus conet'd there-				20,005	20,508	163,124
1	725 12 149 1	,636,	32,06 $10,59$	7 1,948	withE		483	692		3,493	
4.3	579 36 964 5	0.166 0.667	26,42 9,77	4 57,045 3 28,742	To RussiaCwt.	1,521	1,022	637 3,884	11,417	7,527 $24,401$	3,696 23,032
	368 122	,498 ,406	$101,59 \\ 3,99$	1 14,968 4 7,038	Turkey	1,014	1,103		55,004 7,503 26,686	8,093	
6,0	036 29	,896 3,562	36,62 34,59	78,757 1 32,513	United States Other Countries			6,748 $3,959$		15,456 $27,150$	
13,9	994 128	.811	205,41	4 186,278	Total Cwt.	18,504				86,120	
32,4	184 393	3,743	517,65	ē 481,425	ZING OF SPELTER- CWI	17,075	17,371	10,244	14,677	17,119	14,590

A Laboratory for Mechanical Tests of Iron.

The following correspondence has been laid before the American Iron and Steel Association. The plan proposed by Professor Thurston, endorsed by Professor Morton, and approved by the trustees of the Stevens Institute of Technology, commends itself at once to the approval of intelligent and progresive iron mas ters, and we hope the Iron and Steel Association will render such assistance as may be needed to enable Professor Thurston and his associates in the movement to provide them selves with the necessary machinery. American Society of Civil Engineers and the Master Mechanics' Association will probably co operate. When the promised scientific section of the American Iron and Steel Association is organized, a committee on mechancal tests of iron and steel will doubtless be appointed, and we have no doubt the facilities of the proposed laboratory will be placed at their service :

laboratory will be placed at their service:

Defr't of Mechan'l Engineering,
Stevens Institute of Technology.
Hoboken, N. J., Jan. 30, 1874.

To the Trustees of the Institute: I have recentified with important railroad interests, and who desired to discuss the advisability and the feasibility of a plan, already well matured, for the establishment of a department to be devoted especially to experimental investigations having a direct and practical bearing upon questions arising in the course of regular business.

questions arising in the course of regular ousiness.

A Laboratory for Technical Research, or a "Testing Laboratory," as it was denominated, it was stated, if properly organized, well equipped, and effectively operated, could be made of exceptional value in the direct advancement of science, as well as in the promotion of purely practical interests.

The officers of our important lines of railroad, it was said, desired frequently to obtain dynamometric determinations of the resistance of trains, and of the efficiency of locomotives; to learn with precision the strength and the various other hardly less important characteristics of materials which it was proposed to use in construction; and to ascertain the value of fuels and of lubricating materials.

Iron and steel makers are equally desirous of

of fuels and of lubricating materials.

Iron and steel makers are equally desirous of obtaining reliable and thoroughly accurate knowledge of the chemical constitution of their products, and of their physical structure and properties, and such knowledge of the relations existing between these two sets of quatities as can only be secured by careful comparison of the results of skillful and systematic investigation.

Manufacturers of machinery, and construc

investigation.

Manufacturers of machinery, and constructors generally, are seriously in need of a recognized authority, to which they may send the materials purchased, or proposed to be purchased, by them, with condidence that their qualities shall be carefully determined and their value ascertamed, and that the deductions from experimental examination shall be intelligently made, uninfluenced by any private interest.

Those members of the engineering profession who are engaged in general practice were said to constitute still another class of business men to which such an institution would lend valuable aid; and, in fact, every business would derive, directly or indirectly, great advantage from its establishment.

Were the foundation of this proposed laboratory shown to be practicable, it was thought that all would assist, and that the three classes first named would consider themselves justified in uniting to contribute to its creation and support; that business interest and a liberal policy would combine to secure its establishment on such a basis as would insure every facility for the investigation of prol lems arising daily in practical work in the systematic and thoroughly scientific and eflective manner proposed.

It was considered that this laboratory, devoted to technical research and to the practical application of science in matters of business, should be under the charge of some scientific institution of acknowledged high character, in order that the loft those who should aid in its establishment should find it readily accessible. It should be supplied with the most delicate instruments, the most powerful testing machines of all kinds, and a full supply of the best forms of dynamometric apparatus known to engineers.

It should have conveniently near a corps of scientific men, familiar with the practice of engineering, whose opinion could at any time be asked in matters with which they might be most familiar.

most familiar.

The best collections of physical and chemical apparatus should be within reach of its officers, apparatus should be within reach of its officers, in order that they might, in the hands of those directly responsible for them, be brought into use whenever work in progress should render special researches in pure science advisable.

The laboratory should be provided with well trained and educated experimenters, capable of making satisfactorily any series of investigation that might be called for.

It was urged that these requisites could probably be best secured by the establishment of the proposed Mechanical Laboratory in connection with this Institute.

An antive of Sheffield, England, of the proposed Mechanical Laboratory in connection with this Institute.

Address, "AGENT,"

nection with this Institute

nection with this Institute.

Its central location, its special adaptation in plan and method of instructions as a School of Mechanical Engineering, its extensive collections and their exceptional character, the completeness of its organization, and its thorough adaptation in all respects to this kind of work, seemed to indicate this as the best possible location for such a new department as that proposal.

was thought that should the trustees con It was thought that should the trustees consider it advisable to accept such an addition to their responsibilities, and to grant the space needed, and also to guarantee a hearty considerable and also to guarantee. needed, and also to guarantee a hearty co operation, there would be no difficulty in secur ing from business men to be benefited by its sufficient amount of capital to purchase a complete outfit, and probably to provide such an endownment as should insure its support without any way taxing the resources of the College

out any way taxing the resources of the College.

Should the plan succeed, it was thought that a moderate income might also be obtained, by assessing the actual cost of special examinations upon those for whom they might be made, provide for a continued increase of facilities by additions to its stock of apparatus, and by the improvement of its personnel.

This matter has appeared to me an extremely important one, and I have, therefore, noticesitation in placing it before you and asking its careful consideration.

I have consented, without hesitation, in the event of your favorable action, to aid as for

I have consented, without hesitation, in the event of your favorable action, to aid as far as lies in my power, in the organization and operation of such a laboratory, and have promised, should it become necessary, to assume the responsibility of its direction, and to endeavor to secure such an administration as should compensate its founders for their expenditure of capital, and the Institute for the fax which its support may incidentally bring mon it and s should lend to the business interests of the country more efficient aid than they have been accustomed to rescive from purely scientific work.

I believe that such a plan as that here laid before us would give to this country an institution such as has never yet been organized, and one whose value will prove beyond estimation. The accumulation of facts, the valuable applications of science, and the directly practical bearing of the work which may be done, would, in a comparatively short time, be productive of richer results than have been attained in constructive science during many years past.

It would do most effectively that work which has hitherto been too much neglected, the application of scientific knowledge to familiar work and matters of business. It would do much to close up the space which so widely separates the man of business from the man of science, and would lead to a far more perfect system of mutual aid than has yet existed. An institution like this can do no nobler work than that which, by assisting in the improvement of technical methods, and by the application of science to improvements in practical construction, aids in the development of the natural resources of our country, stimulates the growth, in extent and perfection, of its most important industries, and contributes in a thousand ways to the welfare of the people. Very respectfully. R. H. Thursaron, Professor of Mechanical Engineering.

Stevens Institute of Technology, 1

Professor of Mechanicai Engineering.

Stevens Institute of Technology, 1
Horogen, N. J., Feb. 3, 1874. 5
To the Trustees of the Stevens Institute of Technology—Gentlemen: It gives me great pleasure to indorse the suggestions contained in the accompanying letter of Prof. R. H. Thurston, and to commend them to your favorable consideration. Yours, respectfully,
HENRY MORTON, President.

Henry Morton, President.

February 2, 1874.

Prof. R. H. Thurston—Sir: The trustees have to acknowledge the receipt of your favor of January 30th, and have given it careful consideration. They are so favorably impressed with the proposed establishment, in connection with the Stevens Institute of Technology, of an adjunct "Laboratory for Technical Research" or "Testing Laboratory," as you denominate it, that they gladly give the plan their cordial approval, and will tender every assistance possible in its formation and maintenance.

The trustees will accord all necessary space, when not required by the Institute, whether within the present buildings or upon the grounds, and all facilities for investigation possessed by the Institute, providing that the work of the college itself is not interfered with.

They would assist in organization, and request the faculty of the college to aid, as far as they may have the will and the power, and would accept such responsibility as may in propriety fall upon them.

It should not be forgotten that the Stevens Institute of Technology was established as a special school for mechanical engineering, and as such has a well understood policy and well defined aims.

To the accomplishment of this work all of

defined aims.

To the accomplishment of this work all of To the accomplishment of this work all of these facilities supplied by its founder must be studiously directed, and the trustees do not, therefore, feel themselves at liberty to divert any portion of its income to the maintenance of even an institution so valuable as an adjunct to the college.

We recognize fully the importance of bringing into as close relations as possible the science and the industrial knowledge of the country, and we understand the effectiveness with which the workers in the two fields may aid each other.

In establishing the Stevens Institute of Tech In establishing the Stevens Institute of Technology on its present plan, they felt that its success in the field of labor chosen would become an important element in securing this cooperation of science and labor, and of theory and practice, by giving to the world a class of men who should combine as effectively as possible these two important elements of successful training.

ful training.

They already see proof of the correctness of these views, and they recognize in the proposed plans means of rendering the work of the college still more effective. (Signed) Yours, &c.,

W. W. Shippen,

S. B. Dod,

Special Notices.

Established 1859. H. R. IVES & CO.

Successors to IVES & ALLEN,

Builders' and House Furnishing HARDWARE.

Also Manufacturers' Agents.

Consignments of American Hardware olicited. N. B.—Sales confined to the jobbing trade Address, H. R. IVES & CO., Montreal, P. Q.

File and Steel Trade.

England States, will shortly be open to an engage-" AGENT,"

P, O. Box 3921, Boston, Mass.

LE COMMERCE,

Paris, - - Brussels. Daily Industrial Financial paper. Agent for advertise nents for the United Sta

C. KIRCHHOFF, Commercial Editor " El Cronista," Box 2806 P. O., N. Y.

J. MALLINSON & CO.'S Warranted Cast Steel SHEARS AND SCISSORS

For order of 50 doz, and upward, we will discou 70 and 10 per cent. for the next 30 days

GRAHAM & HAINES, Sole Agents,

88 Chambers Street, N. Y.

\$7000

Will buy the stock, fixtures and good will of a well established Hardware, House Furnishing, Stove and Tin business. Sales of 1873, 132,000. A very desirable chance to invest and to step into business Address OTTO MEYER,

452 P. O. Box, Little Rock, Ark.

A manufacture of Iron, a thorough, practical man with over 20 years' experience in the draughtsman, Civil and Mechanical Engineer, at present in charge of the construction of a blast furnace in the South, will be open to er Address.

Office of The Iron Age, No. 10 Warren Street, N. Y.

Special Notices.

Situation Wanted

By a Practical Roll Turner. A steady, reliable an. Address, ROLL TURNER, Office of The Iron Age, 10 Warren St., N. Y.

Katahdin Charcoal Pig Iron. O. W. DAVIS. Jr. Manufacturer, Portland. Me.
Furnace in Piscataquis County, Mc., for Car Wheels,
Stand Collis, and any purpose requiring great strength.
South Person Tests, Kataldin Ing Iron.
No. 3, cently 2432
No. 4, 2432
No. 4, 72395
No. 4, 25395
No. 5, cently ratio or water from Bangor or Portland.
Samples and analyses furnished on application.

MANUFACTURERS

f introducing their goods to the British and Continental Markets, are advised to insert ished every Saturday, at 99 Cannon Street,

SCALE: First 3 lines, 3/; every additional line, 10d.

Manufacturers of Guns, Cutlery or Hardware

Who wish to establish an Agency in New York City for their products, or to engage an Experienced Salesman who has been in the Importing Business over 20 years, and has an extensive no quaintance with first-class dealers throughout the United States, can learn of a person capable of eitner position, who can give rest of references, by applying to R. F. Little, Attorney at Law.

Room 10t. 71 Breadway, New York City.

A. PURVES & SON,

Scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbi Metals, Foundry

Facings. Best Quality Ingot Brass.
Cash paid for all klads of Metals and Tools.

STERLING IRON & RAILWAY CO.

SHIPPERS OF

STERLING MAGNETIC IRON ORE

FOR BLAST AND PUDDLING FURNACES.

A. W. HUMPHREYS, Treas, 42, PINE ST., N. Y.

Co-Partnership Notice.

PHILADELPHIA, January 1, 1874. W. R. Gurnis is this day admitted as a partner mour firm. The style of the firm remains as hereto MALIN BROTHERS,

Iron Commission Merchants, No. 228 Dock Street

To the Trade. HARDWARE TRADE REGISTER.

Owing to the backward state of trade occasioned by the late panic, we have deemed it advisable to defer the issue of our Trade Register until a later period than usual in order to give its nenetits to the trade of next season. It having one reputation of their own, are endeavidently having no reputation of their own, are endeavidently having no reputation of their own, are endeaving the state of the state

The Merchants and Manufacturers Agency, No. 4 & 6 Warren St., N. Y., ublisher.

A native of Sheffield, England, of thorough experience, having a large connection in the New England States, will shortly be open to an engage on one of the shortly be open to an engage of the shortly be open to an engage of the shortly be open to an engage of the shortly bearing our official seal, and signed by the manager, and memory receipt stamped with our seal and country receiving the money.

B. W. THOMPSON, Manager.

TO INVENTORS.

PROMPTLY,

A. V. BRIESEN, Solicitor of Patents and 258 Broadway, N. Y., cor. Warren St.

THE

CANADIAN BANK OF COMMERCE.

Capital - - \$6,000,000, Gold. Surplus - \$1,500,000, Gold.

The New York Agency, No. 50 Wall Street, buys and sells Sterling Exchange, makes Cable Transfers, grants Commercial Credits, and transacts other Banking Business.

J. G. HARPER, Agents.

R. T. HAZELL, AUGTIONEEB.

By R. T. Hazell & Co.,

Store No. 94 Reade Street. Our REGULAR SALES of HARDWARE, CUT LERY, FANCY GOODS, &c., will be held on TUES DAYS and FRIDAYS throughout the season.

CASH ADVANCES made on CONSIGNMENTS without additional charge.

Special Notices. NOTICE.

TO WHOM IT MAY CONCERN. I have no agent in New York city, or elsewhere, authorized to purchase goods or contract debts or liabilities of any kind for me.

CHARLES OTTO, San Francisco, Cal.

WM. E. TANNER & CO., Metropolitan Works. Second-Hand Machinery.

Steam Engines, Boilers and other MACHINERY,

Canal St., from 6th to 7th, Richmond, Va. In addition to a full line of new engines, boilers, saw

w mill, saw mill, saw mill.

Three 4 horse-Power Stationary Engine, as good as ow, complete, with "Judson" governor, fly wheel, &c. One 39 Horse-Power Stationary Engine, in good runing order, but not as new as the above.

One 16 Horse-Power Stationary Engine, with new versal boiler.

One 16 Horse-Fower Stationary Engine, with new vericial boller.
One Ottls Holsting Engine, in good order.
Two Flue Isolners, 36 ft. long, 42 in. diam., each with wo 14 in. flues, iron front, grates, &c., in good order.
One Flue roller, 31 ft. long, 48 in. diam. with two 14 in. lucs, about as good in level, and the land of the long and the long and the long and the long are of the long as good order.
Two No. 6 Sturtevant Blowers, Two No. 4 McKenzie Grovers. One No. 6 Andrew's Centrifugal Pump. One No. 6 Andrew's Centrifugal Pump. One Ko. 6 Turbinate Centrifugal Pump. Three No. 0 Cameron Pump. One No. 6 Andrew's Centrifugal Pump. One Knowless and Pump. One Earle Pump.
Thirty Brass Tubes, 14 diam., 12½ ft. long.
Send for illustrated catalogue and Price Lists.

J. M. WHITE,

Architect and Constructor of Charcoul Blast Furnaces. Plans, Specifications and Esmates of construction furnished upon application Office address,

FON DU LAC, WIS.

DAYTON & LAMBERSON'S (Copyrighted Standard Lists.)

DISCOUNT BOLT LIST.

DISCOUNT SCREW LIST.

PRICE REDUCED.

DAYTON & LAMBERSON, 83 Duane Street, N. Y.

High Grades BOILER PLATE IRON, Locomotive Tank Iron, Big Muddy Coal, Timber & Farm

FIRE BOX IRON. and plates of every character and variety, and of all the higher grades of Iron, from one-half inch thick to No. 18 W. G., rolled to specification.

Also, High Grades Bar Iron
Of refined and double refined qualities, and of all
sizes, rolled to order.
Having a productive capacity of 20,000 tons per annum, we are prepared to fill large specifications
promptly, while our Irons, being neutral in character
and uniform in their working qualities, need but a
trial to ensure their continued use.

Rolled Railroad Axles a specialty. Consumers' Direct Trade solicited.

Catasauqua Manufacturing Co.,

Catasauqua, Pa. REPRESENTED BY Theo. Sturges, Geo. B. Atlee,

ROLLING MILL.

240 Pearl St., N. Y.

We have the machinery for a bar mill, which we wish to put in operation at Lockville, Chatham county, North Carolina. Lockville is on the Raleigh and Augusta Air Line Railroad and the Deep River ten miles below the Egypt Bituminous Coal Fields. The climate is mild and the location desirable. A mill at that place would command all the local trade of the State. A person or persons having a knowless, and capital sufficient to w

wanted to take an interest. Inquire of J. M. HECK, Prest. Deep River Mfg. Co., Raleigh, N. C. Or GEO. G. LOBDELL,

Wilmington, Del.

333 Walnut St. Phila.

For Sale.

IRON FOR SALE. ULSTER BLAST FURNACE NAPANOCH, N. Y.

M. M. PILLSBURY, 85 John St., N. Y.

HARDWARE STORE.

For Sale, a first class Too' and Hardware business situated in the best business part of Jersey City, Established about 25 years, and in flourishing con dition. Apply to H. LUTTGEN,

57 Montgomery St., Jersey City.

Iron Foundry For Sale.

Any person wishing to engage in the foundry usiness, may learn an opportunity to purchase ew building just crected for said business, all com plete and ready to be started without delay or addi tional expense. A shovel factory adjoining the foundry will furnish a large and regu'ar demand for castings. For further particulars, address,

H. F. A., Box 488, Northampton, Mass Or said property would be exchanged for unen-cumbered productive real estate.

for Sale, &c.

Tools For Sale.

We offer for sale at this time, at panic prices, the following

One Lathe, 12 feet Bed, 34 inch swing,

screw cutting, triple gear, compound rest with cross feed..... One Lathe, 9 feet Bed, 22 inch swing, chain feed..... One Lathe, 7 feet Bed, 17 inch swing, screw cutting..... One Lathe, 8 feet Bed, 22 inch swing, screw feed

One Lathe, 12 feet Bed, 22 inch swing, screw feed..... One Large Upright Drilling Machine, stroke 71/2 inch.....

One 26 inch Gear Cutter with Cutters and arbors..... 200 00 One 36 inch Gear Cutter..... 150 00 One 60 lb. Atmospheric Hammer. Hotelikiss Patent, with lot of Tools. 450 00 Two Planers, 8 feet Bed, with cross and

inch above; \$600 each................. 1200 00 One Screw Machine, 9 inch diameter, 8 cutters..... One Portable Engine, 6 inch cylinder, 10 inch stroke 500 00

down feed, 27% inch between, 321/2

Will exchange a portion of the above for a Stationary Engine of about twenty or twenty five horse power.

The Stiles & Parker Press Co., Middletown, Conn., Jan. 9th, 1874:

FOR SALE. In Bloomington, Ille., a first-class Hardware business, which has been established for over 20 years. The proprietor wishing to retire from active business, offers this very favorable chance to any one desirous of purchasing. Amount of stock about \$12,000. Terms. part down, balance on time, or a liberal discount will be made for cash. For credit and standing, see any of the Commercial Reports. Address, for particulars, GEO. BRADNER, Bloomington, Ills.

HARDWARE. An old established business For Sale, situated in one of the most thriving towns in Northern New York. An investigation invited and satisfactory reasons given for selling. Capital required about

\$40,000. Address, A. B. C., Office of THE IRON AGE, 10 Warren St., N. Y SAFE INVESTMENT. For Sale,

Lands. The whole or one interest in 746% Acres of the Big Muddy Smelting Coal Lands, in Jackson County, Illinois. Vein 3 and 6 feet in 80 feet from surface; five improved Farms, with 246 acres under feaces; Timber, such as White and Burr Oak, Walnut, Poplar, Ash; being 500 acres. The Timber alone will pay for the land. The St. Louis and Carro Railroad runs through said lands, two miles from Murphysboro, the county seat of Jackson County, Ill. Will sell the whole for \$75 per acre, and take half or one-third interest. Address

DOBSCHUTZ & ABEND, Owners of three Mines in St. Clair Co., Illinois Belleville, St. Clair Co., Ills.

FOUNDRY PROPERTY For Sale, or to lease with privilege to buy consist ing of Foundry, Machine Shop, with powerful steam engines, and other buildings. Water front on North River, Peekskill, 42 miles from New York, compris

ing 21/4 acres. Apply for particulars, to C. E. APPLEBY, 167 Broadway. STEAM ENGINE, ROLLING MILL TRAINS, &c., FOR SALE.

1 Large Steam Engine 24 in. Cylinder, 5 ft. Stroke, Green's Pattern, Sickles Cut off, good running order. Price \$2.50. Run, say, 3 years.

I Andrews' Oscillating Steam Engine, 6 in. Cylirder, 12 in. Stroke, nearly new 1. Train 18 in. Puddle Bar Rolls.

1 Train 18 in. Puddle Bar Rolls.

1 Train 16 in. Finishing Bar Rolls, with a fair useortment of Rolls for Round, Square and Flat Iron,

assortment of Rolls for Round, Square and Flat Iron, price 25/c per lb.

1 Train 9 in. (Guide Mill) Rolls for making ½ to ½ in round and square Iron. Price 25/c, per lb.

3—20 in. dia. by 30 ft. Boilers with Columns, and Castings for setting same over puddling or heating furnaces, 25/c, per lb.

9 Sets furnace Castings, 25/c, per lb.

50 ft. 6 in. wrt. Shafting with Journa's and pedestal, 5 cts. per lb.

2 Sets Shears for cutting Bar Iron.

1 Koll Lathe.

1 Large Nut punching Machine, nearly new, \$450.

4 Washer do. \$90 each.

1 Circular Saw and frame for cutting ends of Bars and Ralls.

Inquire of JOHN W. QUINCY,

Inquire of JOHN W. QUINCY, 98 William St. New York, or J. W. LEONARD, Somerset, Mass.

Valuable Iron Works. For Sale.

The undersigned offers for sale the Iron Works in Pottsville, Schuylkill County, Pa., known as "Th Washington Works," consisting of a

Large Stone Machine Shop & Foundry, Brick Pattern House, Erecting Shop, Stone Blacksmith Shop, Brick Office, and Lot of Ground containing in front 195 feet

3 inches, and in depth 260 feet.

There will be sold with the above a large and valuable collection of Patierns, Heavy Crane Flacks and Heavy Core Spindles for making heavy Castings and Pipes of all sizes; Turning and Planing Tools. The Works can be put in immediate operation A favorable opportunity is here presented for enter

prising men. The demand for Castings and Machinery is constantly increasing n this region. The propperty will be sold on liberal terms. If not sold in a reasonable time it will be for Rent. For particulars apply to J. W. ROSEBERRY, Trustee

Pottsville, Pas

Trade Report.

Office of The Iron Age, Wednesday Evening, April 1, 1874.

The past week has been comparatively uneventful in Wall street, and the chief subject of interest has been the evident growth of a sentiment in the Senate in favor of an increase of the legal-tender issue. There is no longer any reason to doubt that the House bill authorizing the issue of the whole of the \$44,000,000 reserve will become a law, and it is best it should. The amount issued by Mr. Richardson during and since the panic could not be called in without giving rise to serious mischief, and as the country needs more currency it should have it. We should have approved more heartily the passage of a law authorizing the establishment of new national banks and an increase of national bank notes; but there seems to be no present chance of carrying this measure, and the country cannot wait for it. The only immediate effect of the certainty of an increase in the output of legal tenders was a slight appreciation in the value of securities. The effect upon general trade will not be felt until they have gone into circulation, but the final vote of the Senate on the pending bill, and its approval by the President, will have the effect of establishing confidence. and a prompt improvement in trade may be ex-

The money market has continued easy to borrowers on call at 4 @ 5 per cent., and prime commercial paper has been in good demand at 51/6 @ 7 per cent. The drain of currency for April settlements has not materially affected the banks, and after this week the currency movement will be toward New York. The following is a comparison of the bank averages for the past two weeks:

The gold market has been strong and the premium has gone up a few points, as will be seen from the following table showing the daily range of quotations :

							E	li	ghest		Lowes
Thursday .	 		 						.112%		1123
Friday	 	 	 0		0				. 113%		113
Saturday	 	 	 						. 113%		1123
Monday	 	 							.1133	6	112
Tuesday	 	 	 						.113%		1133
Wednesday	 		 	 0					.118%		113
						-					

The stock market developed strength early in the week, but shortly became feverish and unsettled. The principal dealings have been in Western Union, Union Pacific, Lake Shore, New York Central and Pacific Mail. The market today has ranged as shown below.

Governments have been strong, and railway mortgages strong and active, but investment securities generally have been in but limited request. The closing prices of governments are given below.

The movements in foreign trade for the week have been as follows:

1872. 1873. 1874. Total for week.. \$9,641,944 \$13,884.598 \$12,431,936 Prev. reported.. 93,065,508 99,447,942 88,112,651 Since Jan. 1.... \$99,707,452 \$113,832,549 \$100,544,587 Included in the imports of general merchandise for the week are:

	Quant.	Value.
Anvils	12	#100
Brass goods		1,739
Bronzes	18	1.564
Chains and anchors		3,590
Copper		7,275
Cutlery		25,982
Guns.		3,927
Hardware		5,610
Iron pig. tons	256	8,542
Iron, sheet, tons		502
R. R. bars		143,368
Do, other, tons		22.232
Do. ore, tons		8,959
Lead, pigs		11,742
Metai goods		16,267
Nails	11	557
Needles	22	9,556
Old metal		5,194
Platina	1	8,368
Plated ware	2	177
Per caps	9	1.912
Saddlery		1,573
Steel	.2,671	30,682
Spelter	76,001	15,287
Silverware	3	226
Tiu, boxes		380,108
Tin, 4,677 slabs	434,886	93,297
Wire	17	4,616
EXPORTS EXCLUSIVE OF SPEC	JIE.	

rth is-

der

to

ped

k450.

Bars

ass.

KS,

dry,

hop, and ject

d val-

Masks

stings

achin

prop

59,026,609	62,914,982
64,387,898 ECIE.	\$68,962,950

Total since January 1, 1874.....\$7,530,874

Government bonds closed as follows:	
Bid.	Asked
U. S. Currency 68117	11736
U. S. 6s 1881, reg1191/2	120
U. S. 6s. 1881, cou	12134
U. S. 1861, 5-90 reg	115*
U. S. 5-20 1862, cou	118%
*U. S. 5-20 1864, reg	117
U. S. 5-20 1864, con11934	190
*U. S. 5-90 1865, reg	117
U. S. 5-90 1865, cou	120%
U. S. 5-20 1865, reg. new	119%
U. S. 5-90 1865, cou	11936
U. S. 5-20 1867, reg11936	120
U. S. 5-20 1867, con	120%
U. S. 5-20 1868, reg1193/	120
TT S # 90 1969 con 190	1901/

*Ex interest.	****/
The following were the highest and	lowes
prices of stocks to-day:	
Highest.	Lowest
N. Y. Cen. & Hudson Consolidated. 1011/4	100%
Lake Shore 8034	793
Rock Island107	106%
Wabash 45%	44
Harlem129	129
Western Union Telegraph 80	795
Northwestern	553
Do. Preferred72%	73
Milwankee & St. Paul	44
Pacific Mail	483
Erie 39%	883
Ohio & Mississippi	813
Union Pacific 884	383
C. C. & Ind. Central 32 4	823
Atlantic & Pacific Preferred 16%	163
Hannibal and St. Joseph 32%	813

GENERAL HARDWARE.

While some houses still report a good busi ness, we find a growing feeling of disappointment at the course of trade. Even those houses who are doing the most business can hardly be making money, on account of the great declines in many important lines of goods and the sharpness of the competition. On the whole, the general feeling is one of uneasiness and dissatisfaction. During the week there has been but little change in prices, which have been reduced so much that many people say there can be no further decline. If prices were governed by the cost of production, this would be unquestionably true in regard to the most important goods; but there are other influences at work in the Hardware market whose effect cannot be so easily predicted.

Henry Burden & Sons' circular quotes the

same prices for Horse Shoes as before, consequently there is no change in these goods.

Russell & Erwin Mfg. Co. have issued the following circular, which needs no explana-

tion:

To whom it may Concern: In January, 1871, the "Metallic Art Works," a joint stock company, was duly organized under the general laws of the Commonwealth of Massachusetts, and located in the city of Boston. In the early spring of 1875, for reasons quite satisfactory to every stockholder, the business of the "Metallic Art Works" was closed up, its debts paid (except to the stockholders), its charter surrendered, and by act of the General Court of the Commonwealth, it was disincorporated, and thereupon ceased to exist.

During the existence of the corporation, the "Metallic Art Works" were under contract with, and license from, us to manufacture exclusively for us Compression Bronze Builders' Hardware, under certain Letters Patent relating to the molding, casting and cleaning of Compression Castings, wherein we were, and now are, the sole and exclusive owners of the right to manufacture "All articles which now are, or hereafter shall be, classed or known by the trade as Builders' Hardware, including fixtures for railroad car doors, windows and shutters." Upon the closing up of the business of the "Metallic Art Works," the above named contract or license was cancelled, and we are now the sole manufacturers of Real Compression Bronze Builders' Hardware.

We are led to make this statement in order to correct false impressions which are sought to

Bronze Builders' Hardware.
We are led to make this statement in order to correct false impressions which are sought to be conveyed, and false statements which are made by certain parties who are unauthorizedly seeking to do business under the style of the disincorporated "Metallic Art Works."

RUSSELL & ERWIN MFG. CO.

NEW BRITAIN, COUN., March 28th, 1874.

The Union Glass Company have adopted the No. following reduced price list of Glass Curtain Pins, from which the present discount is 10 per

No.															I	4	er
0, 236	incl	Rosett	e. 8	llv	er	e	d.			 							. 8
1, 236	60	Plain.															
2, 216	6.6	Engrav	red														
8. 3	6.6	Rosett	6														
1, 3	6.6	Plain															
2, 3	6.6	Engrav	red.														
3, 3%	4.6	Rosett	0						 ì		i	ì	ì				
4, 8%	44	Plain									 						
5, 836	6.6	Engrav	ed.														
6, 436	6.6	Rosett	8														
7. 436	6.6	Plain.						 			 						
8, 436	4.6	Engray	ed.							Ť,							
0, 236	6.6	Painte	1						ì								
1, 3	6.6	+4						 							ľ	Ū	
2, 336	6.6	66															
3, 436	6.6	4.6															
4, 236	6.5	White,	Pai	ate	ed									Ì			
5, 8	45	65															
6, 3%	6.6	6.6	61														
7, 436	6.5	4.6	64														

Trade in Foreign Hardware has fallen off considerably during the past week, and it is plainly evident that considerable uncertainty exists as to the future of prices. Trace Chains are quoted by the single cask at 60 cents, gold for 61/2-10-2, and 3/4 inch Coil Chain at 81/4 cents, gold, in a small way. These figures would be shaded for a fair order. On the 12th ultimo we quoted Wilson's Butcher Knives, Steels and Shoe Knives at discount 25 per cent. We are informed on excellent authority that this price represents the closest figure to largest buyers; the regular discount is variously quoted at 15 @ 20 per cent.

J. & Riley Carr have in stock a full line of their celebrated Dog brand Fi'es and Rasps, which they continue to quote at \$5.50 to £ for Files, and \$5.75 for Horse Rasps. We are pleased to learn that the demand for these standard goods for this season has exceeded the expectations of the makers.

It is generally conceded that at the prices quoted for Nails during the past two or three months the profit to the manufacturer is shown on the wrong side of the ledger, and judging from the quantities reported as sold during the month of March, we incline to the opinion tha the trade throughout the country are taking ad vantage of the situation. Business in thi branch has opened briskly for April, but ther is no sign of strengthening in prices-on the contrary, while we continue to quote Nails a \$4, net, for 10d., it is proper to state that for an order of 500 kegs or more this figure would

Trade in House Furnishing Goods shows little sign of improvement, and prices of a good many goods, although without quotable change

are irregular.

Vaughan's Patent Post Hole Augers have been reduced to the following figures: 6 inch. per doz., \$23.60; 9 inch, per doz., \$25—discount 25 per cent. This is an anti-suction Auger, and is having ready sale.

Fernald & Sise, No. 100 Chambers street, are agents for this section for McElhaney's Combined Pruning Shears and Hedge Trimmers which are worthy the attention of dealers in

Garden and Farm Tools. "Millers's Patent Adjustable Plow, Filletste and Matching Plane," manufactured by the Stanley Rule and Level Co., and illustrated in their advertisement which appears in ou columns this week, must be excepted from the unfavorable judgment which many parties are ready to pass on a combination tool. The combining of several tools in one is frequently done at the sacrifice of the best qualities which may belong to each in its separate form; but in the practical use of this tool it is found that for any purpose for which the ordinary tools, herein combined are employed by the work-81% man, a better substitute is had in the use of

Miller's combination. The best proof of the appreciation of the tool by mechanics is the ale of over 2500 of them already, and an in reasing inquiry for them from all parts of the country. The retail price of No. 41. Iron Stock and Fence, is \$10.50; No. 42, Gun Metal Stock and Fence, \$13. Eight Plow Bits and Tonguing Tool are included in each box.

Our 24th page is taken up this week with an advertisement of the various kinds of Connell's Patent Gong Bells, made by the Hart, Bliven & Mead Mfg. Co. The Crank and Pull Bells are well known, and have been largely sold. The Thumb Latch Bell has been only in the market a few weeks, but we are informed that it has been remarkably well received. It will be no-ticed that the price is very low, and we hear it everywhere spoken of as an excellent article. The assortment of styles is very complete.

We invite the attention of the trade to Hart's Patent Saw Set, an illustration of which will be found in the advertisement of the Union Nut Co. on page 29. The manufacturers claim for this tool that while it is simple in construction, it is at the same time the most powerful Saw Set at present before the trade. It is well finished-made of best malleable iron, except the Set Lever, which is of cast steel. The directions for using it are simple and are fully explained in the advertise ment referred to.

Among Special Notices, on page 16, will be found the card of H. R. Ives & Co., successors to the old established and wel! known house of Ives & Allen, Montreal, P. Q., which, we think is worthy the attention of manufacturers who desire to extend their trade in the Dominion of Canada.

We publish below the revised list, complete of the C. W. Maguire Brush Co., Graham & Haines, agents, issued under date of April 1st. Among the new goods we notice several new patterns of Horse Brushes, a full line of Paste and Wall Brushes, a new line of Fancy Dusting Brushes and "Maguire's Patent Handle Shoe Brush" (an illustration of which will be found in another column). All brushes made by this concern and stamped "Maguire" are of pure bristle and fully warranted. The entire list is subject to a discount of 50

per cent., with a further discount of 1 per cent. for cash, if received in ten days from date of mvoice.

Wood-Back Horse Brushes. Per dor

No.		L	eat)	her	-		ac al		_	_		-	_	91	u	8)	16	8.	,					r do
14.	6.5										0				٠						٠			27
12,											0			۰	0									
10,	66	-																						
8,	44																							
6,	44																							
4,	0.0																							
	ea Ro																							
No.							d_i	-																er de
-					_	_		_	_	_			 _	_		_	_	_	_	_		_	_	
88.	09																							
	Sea R	not																						
80.	64	1116		60	-																			
	All W																							
	All Br																							
	Arab.																							
	Rosev																							
	Jocko Reind																							
	Ameri																							
	Lady																							
2173																								
	Dexte																							
	Union																							
41																								

5. Patent Leather \$9-7, \$13, \$13, \$13, \$14, \$13, \$14, \$15, \$17, \$1660, \$18, \$18, \$18, \$18, \$19, \$19, \$19, \$19, \$19, \$19, \$19, \$19		Lec	the	r-Back	Horse	Brus	hes.		
7	No.			Plain	Back	8.		Per	r doz
13, 660, 660, 660, 660, 660, 660, 660, 66	5.	Patent Le	eath	er					\$9.00
13, "	7.	8.0							11:00
12, Bismarck	13.								13.00
15, 20 114, 30 114, 30 114, 30 114, 30 114, 31 31 310, 3	660,	66		Black	k Bris	tle			66:00
114, " All Bristle. 17 210, " All White Bristle. 26 114, Green " 17 25, Russet " 21 75, " Gray Stock 26 450, " All Black Bristle. 38 20, " All Black Bristle. 38 20, " All Black Bristle. 38 30, " All Bristle. 45 30, " All Bristle. 56 528, " All Bristle. Penetrating 57 xxx " Yellow O'Katka Bristle. 72 xxx " Yellow O'Katka Bristle. 72 xxx " Yellow O'Katka Bristle. 72 xxx " Yellow O'Katka Bristle, very Stiff. 92 xxxx " Yellow O'Katka Bristle, very Stiff. 92 xxxx " Yellow O'Katka Bristle, very Stiff. 92 xxxx " Yellow O'Katka Bristle, very Stiff. 16 00. Black Brushes. Per do 00. Patent Leather \$13: 115, " 18 116, " 23: 117, " 36: 118, All Black Bristle Embossed, "The Pride." 54: 30. " 45:	12.	Bismarck							14.00
210,	15.								20.00
210,	114.			All I	Bristle				1700
14. Green " " 17. 25. Ruset " 21. 75. " Gray Stock 26. 450. " All Black Bristle 38. 20. " All Black Bristle 46. 30. " 66. 553. " All Gray Bristle 66. 554. " All Gray Bristle 75. 222. " All Gray Bristle 75. 222. " Yellow O'Katka Bristle 77. 222. " Yellow O'Katka Bristle 77. 223. " Yellow O'Katka Bristle 79. 224. " Yellow O'Katka Bristle 79. 225. " Yellow O'Katka Bristle 79. 226. " Yellow O'Katka Bristle 79. 227. " Yellow O'Katka Bristle 79. 228. " Yellow O'Katka Bristle 79. 238. " Yellow O'Katka Bristle 79. 248. " Yellow O'Katka Bristle 79. 251. " Yellow O'Katka Bristle 79. 260. " Black Brushes. Per do 79. 261. " 18. 261	210.	6.6		All V	Vhite !	Bristle			26:00
25, Rawet "" 217 75, "" Gray Stock 26 450, "" All Black Bristle 38 30, "" " 56 40, "" 66 555, "" All Gray Bristle 55 5222, "" All Bristle Penetrating 57 xx "" Yellow O'Katka Bristle 72 xxx "" Yellow O'Katka Bristle, 72 xxx "" "Yellow O'Katka Bristle, 72 xxx "" "" "" "" "" "" "" "" "" "" "" ""		Green	6.6	4.6		6.6			17:56
75, "Gray Stock. 26 450, "All Black Bristle. 38 20, "All Black Bristle. 45 30, "Gray Stock. 26 40, "Gray Bristle. 45 56 40, "All Gray Bristle. 66 585, "All Gray Bristle. 96 222, "All Gray Bristle. Penetrating. 57 xxx "Yellow O'Katka Bristle. 7 xxx "Yellow O'Katka Bristle. 7 xxx "Yellow O'Katka Bristle. 92 xxxx "Yellow O'Katka Bristle, very Stiff. 92 xxxx "Yellow O'Katka Bristle, very Stiff. 96 000, Rasset Leather, All White Bristle, very Stiff. 16 000, Patent Leather 16 115, "Bristle. 18 116, "Bristle. 18 117, "Bristle Embossed, "The Pride. 54 117, "Bristle Embossed, "The Pride. 54 120, "45			6.6	6.6		6.6			21.00
450, "All Black Bristle			4.4	Grav	Stoc	k			26:00
90, "All White Bristle 45- 30, " "66- 40, " "66- 585, "All Gray Bristle 55- 585, "All Bristle Penetrating 57- xxx "Yellow O'Katka Bristle 72- xxxx "Yellow O'Katka Bristle 72- xxx "Yellow O'Katka Bristle 72- xxxx "Yellow O'Katka Bristle 72- xxx "Yellow O'Katka Bristle 72- xxxx "Yellow O'Katka Bristle 72- xxx "Yellow O'Katka Bristle 72- xxxx "Yellow O'Katka Bristle 72-		64	4.6						38:00
300, " " " 56- 400, " " All Gray Bristle. 66- 585, " " All Bristle. Penetrating. 57- xx " " Yellow O'Katka Bristle. 72- xxx " " Gray Bristle, very Stiff. 92- xxx " " Yellow O'Katka Bristle, very heavy. 90- 0000, Russet Leather, All White Bristle, very Stiff. 18- 18- 110, " 18- 110, " 18- 1110, " 18- 1111,		4.6	64	All V	Vhite	Bristl	0		45.00
40, " " " " " " " " " " " " " " " " " " "		5.6	6.6	66		44			56.00
588, "All Bristle, Penetrating 57 xx "Yellow O'Katka Bristle 72 xxx "Yellow O'Katka Bristle 72 xxxx "Yellow O'Katka Bristle 72 xxxx "Yellow O'Katka Bristle 72 xxxx "Yellow O'Katka Bristle 90 000, Russet Leather, All White Bristle, very Stiff 108 No. Black Brushes. Per do 000, Patent Leather \$13 115, "18, All Black Bristle Embossed, "The Pride 54 116, 30 117, All Black Bristle Embossed, "The Pride 54 118, All Black Bristle Embossed, "The Pride 54 120, "The Pride 54 130, "The Pride 54 145 150, "The Pride 54 150, "The Pride		4.6	4.6	6.6		64			66:00
2222		6.6	44	A11 G	ray B	riatlo			
XXX		6.6	6.6	All B	rigtle	Pene	trating		
xxx " " Gray Bristle, very Stiff. 92" xxxx " "Yellow O'Katka Bristle, very heavy. 0000, Russet Leather, All White Bristle, very Stiff		64	4.9	Vallo	m O'I	Cathra	Reletto		
xxxx "Yellow O'Katka Bristle, very heavy 2000, Russet Leather, All White Bristle, very 2000, Russet Leather, All White Bristle, very 2000, Patent Leather \$13'. 115, 125 120, 123'. 116, 14 23'. 117, 18, All Black Bristle Embossed, "The Pride." 54'. 20, 15'.		6.5	66						
very heavy 90' 0000, Russet Leather, All White Bristle, very Stiff. 108' No. Black Brushes. Per do (00, Patent Leather 18' 110, 18' 18' 110, 23' 116, 30' 118, All Black Bristle Embossed, The Pride. 54' 20, 45'		44	84	Volle	Dillet	Katha	Delai.	il.	9/2 00
No. Black Brushes. Per do		very he	avy						90:00
No. Black Brushes. Per do 100, Patent Leather	0000,	Russet La	ath	er, All	Whit	te Bri	stle, ve		
00, Patent Leather \$13" 115, 184 110, 195 116, 300 117, 118, All Black Bristle Embossed, "The Pride," 54 20, 45"		Stiff							108.00
115, 18" 18" 18" 110, 110, 116, 128" 116, 116, 117, 118, All Black Bristle Embossed, "The Pride." 54, 20, 45"	No.			Black .	Brush	68.		Per	doz
115, 18" 18" 18" 110, 110, 116, 128" 116, 116, 117, 118, All Black Bristle Embossed, "The Pride." 54, 20, 45"	100. P	atent Lea	ther						13:50
110. " 231- 116. " 30- 117. " 36- 118, All Black Bristle Embossed, "The Pride." 54- 20. " 45-	115.								
16,	110.	6.6							23:50
117, 118, All Black Bristle Embossed, "The Pride." 54: 20, 45:	116.	6.9							30.00
18, All Black Bristle Embossed, "The Pride." 54		64							86.00
20, " 45"	118 A	Il Black I	Brist	le Emi	008860). "TT	e Pride	0.99	54.00
		44	46	20111	46	-,	45	to a	45.00
	130.	66	6.0		64		66		67.00

No.		Rlau	k Brushes		Per do
400	Patent Leat				
	Patent Lent	ner			10.0
115,	44	0 . 0 0			184
110,	44	0000			28.0
116,	44	* + *			30'0
117,		1	mhossed.	17 mm - 10 1	36'0
118,	All Black B	ristie i	smoossed,	The Pric	ie." 54"
120,	All Black B	4.	64	44	45.0
130,					67.0
7	Fancy Embo	ssed L	eather-Bac	k Horse B	rushes.
BTO		TI	he Smort		Por do
MO.	Thurbanad .	n Cold	on Blook	Loothon	@10.4
00	Empossed i	18	1 Bod	AJCHERROS	15.6
27, 18,	66	6.6	44 44	44	99:0
	44	0.6	" Red	64 A	11
310,	Bristle		Oreen		99.0
YO.	oss of the R	ng_E	mhossed o	n Russet I	eather
-					
200.	All White I	infatto.			10.6
	All White I	mette.			19 (
306.	All White I	Inlatio	• · · · · · · · · · ·		07.0
400,					
	The Pride-				
500.	All White E	kristles.			\$33-5
525.	All Gray	66]	Penetrating	Z	81 8
560.	All White	6.6			40.0
575.	All Gray	66			44 0
00,	All Gray All White All Gray All White	6.6			66.0
	The Choice.	-Emb	ossed on l	Russet Lei	ther.
600,	All White I	Bristles			\$56.0
650,	All Black	66			60.0
000,	All Black All White	6.6			800
AUTO, O'BUT			er Brushes		
BYO					
No.	Delaile.				
22. I	Bristle				\$21.0
22, I	66				\$21.0
22, I	66				\$21.0
22, I 23, 94,	66				\$21.0 25.0 29.0
22, I 23, 24, No.	46	Torse 1	fane Brusi	res.	\$21.0 25.0 29.0 Per dos
22, I 23, 94, No. 2, I	Root	Torse 1	fane Brusi	res.	25.0 25.0 29.0 Per doz
22, I 23, 94, No. 2, I 3, I	Root	Torse 1	fane Brusi	res.	21.0 25.0 29.0 Per doz \$15.0
22, I 23, 24, No. 2, J 3, I	Root	Torse 1	fane Brusi	res.	\$21.0 25.0 29.0 Per doz \$15.0 21.0
22, I 23, 24, No. 2, J 3, I	Root	Torse 1	fane Brusi	res.	\$21.0 25.0 29.0 Per doz \$15.0 21.0
22, I 23, 24, No. 2, I 3, I 4, 6, 6	Root	Oval t	fane Brusi	hes.	\$21.0 25.0 29.0 Per doz \$15.0 21.0
22, I 23, 24, No. 2, I 3, I 4, 6, 6	Root	Oval twithou	Shape	hes.	Per doz \$150 \$150 \$150 \$150 \$150 \$210 \$250 \$120
22, I 23, 24, No. 2, I 3, I 4, 6, 6	Root	Oval twithou	Shape	hes.	Per doz \$150 \$150 \$150 \$150 \$150 \$210 \$250 \$120

Stove Brushes.

Per doz. No. \$3.00 6... \$3.50 7... 4.50 8... 5.85 9...

	4 •	
	No. Scrub Brushes, Per dos	N. 1000
e	51 White Fibro 6000	5.
0	51, 31, 35, 35, 35, 35, 35, 35, 35, 35, 35, 35	0
e e	54. Wing. 4.5	0
k !		
k	46, 47, 4-6, 4-7	
a	48, "Wing. 5:5 10, Gray Bristles. 6:0	0
	11, " 8.0	0
n s	13, White Bristles	0
9	14, 14 9:0 15, 19 12:0	
e	Paint Brushes.	-
9	Quality C.	
t	These Brushes are made for common use, suitable for all ordinary kinds of work.	9
0	No. Per doz. No. Per doz	
t	6. #9-50 9-0	0
	3 3 30 4-0 10 5	0
		0
e e	1	0
n	Ex. O. K. or Gloss Paint Brushes.	
8	All White Bristle—a superior Brush—adapted to do the finest inside work.	9
e	No. Per doz. No. Per doz. 6	
e	5.20 3.0) '
e .	4 650 4-0 26:56 3 8:00 5-0 31:00 9:50 6-0 35:00	
8	9·50 6-0 35·00 1 11 50 7-0 42·00	1
e	9:50 6-0 35:00 1 1150 7-0 42:00 0 14:75 8-0 50:00 X Quality.	
9-	No. Per doz. No. Per doz	
	6	1
e	5 325 3-0 1100 4 420 4-0 13 5 3 500 5-0 1600 2 600 6-0 1800	3
s f	4 4:0 4-0 13 5:0 13 5:0 5:0 5:0 15:0 15:0 15:0 15:0 15:0 15)
	0 8.00 8-0 21 0	10 1
0	Super Quality-Warranted all Bristle.	
f	No. Per doz. No. Per doz 0. \$3.00 0 \$12.0 5 3.75 2-0 15.00 15.00	;
	5 3.75 2-0 15·0 4 4.75 3-0 18*	
2	3. 6 00 4-0. 21 0 2. 7.50 5-0. 24 0	0
	1)
V	Superfine Paints. All Bristles Extra Heavy Gray Center.	
e	No. Per doz. No. Per doz	
12	5-0\$42'00 7.0. \$51'00 6-0\$45'00 8-0\$61'00	0
e d	Oval Varidsh Brushes.	
6	Gloss Varnish Brushes, all White Bristles,	
e.	No. Per doz. No. Per doz 6\$300 2-0\$105	0
0	5	0
0 t.	5. 5.00 5-0 16.0 2 6.25 6-0 19.0	0
f	1	
	0 0 00	
	Superior Varnish Brushes, all White Bristles.	1
Z	Superior Varnish Brushes, all White Bristles. No. Per doz. No. Per doz.	
00 i0	Superior Varnish Brushes, all White Bristles. No. Per doz. No. Per doz.	0
10 10 10 15	Superior Varnish Brushes, all White Bristles, No. Per doz. No. Per doz. 6. \$3.25 2-0 \$12.0 5. 4.00 3-0 16.0 4. 5.00 4-0 20.0 3. 6.00 5-0 24.0 24.0	0000
00 00 00 00 00 00 00 00 00 00 00 00 00	Superior Varnish Brushes, all White Bristles, No. Per doz. No. Per doz. 6. \$\frac{3}{2}\sqrt{25} \rightarrow 2-0 \$\frac{3}{2}\sqrt{25} \rightarrow 3-0 1600 1	000000000000000000000000000000000000000
00 00 00 00 05 00	No. Per doz. No. Per doz. 6 \$3.25 2-0 \$120 5 4.00 3-0 16.00 4 5.00 4-0 20.00 3 6.00 5-0 24.00 2 7.58 6-0 27.00 1 9.00 7-0 33.00 0 10.56 8-0 42.00	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No. Per doz. No. Per doz. 6 \$3.25 \$2-0 \$120 5 4.00 \$3-0 16:0 4 5.00 \$4-0 20:0 3 6:00 5-0 24:0 2 7:59 6-0 27:0 1 9:00 7-0 33:0 0 10:5 8-0 42:0 Extra O. K. Varnish Brushes, all White Bristles. No. Fer doz. No. Per doz.	
00 60 00 75 60 60 60 60	No. Per doz. No. Per doz 6	
00 60 75 60 60 60 60 60 60	No. Per doz. No. Per doz	000
00 60 00 75 60 60 60 60 60 60	No. Per doz. No. Per doz	000
00 60 60 75 60 60 60 60 60 60 60 60	No. Per doz. No. Per doz 6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
00 60 60 75 60 60 60 60 60 60 60 60 60 60	No. Per doz. No. Per doz 6. \$325 \$2-0. \$1200 \$15. \$400 \$3-0. \$1600 \$4. \$500 \$4-0. \$200 \$3. \$600 \$5-0. \$2700 \$1. \$900 \$7-0. \$300 \$0. \$1000 \$1. \$900 \$7-0. \$300 \$0. \$1000 \$1. \$900 \$7-0. \$300 \$0. \$1000 \$1. \$900 \$7-0. \$300 \$1. \$900 \$7-0. \$300 \$1. \$900 \$7-0. \$300 \$1. \$900 \$7-0. \$1000 \$1. \$900 \$1.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
00 00 00 75 50 50 50 50 60 60 60 60 60 60 60 60 60 60 60 60 60	No. Per doz. No. Per doz 6. \$325 2-0. \$120. 6. \$325 2-0. \$120. 5. 400 3-0. 16:00 4. 500 4-0. 20:00 3. 6:00 5-0. 24:0 2. 759 6-0. 27:00 1. 9900 7-0. 33:00 0. 10:05 8-0. 42:00 Extra O. K. Varnish Brushes, all White Bristles. No. Per doz. No. Per doz. 8:00 6. \$33:50 2-0. \$15:00 5. 4. 45:00 3-0. \$18:00 4. 6:00 4-0. \$25:00 4. 6:00 4-0. \$25:00 1. 10:00 8-0. 33:00 1. 10:00 8-0. 33:00 1. 10:00 8-0. 33:00 Sash Tools. American Sash Tools.	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No. Per doz. No. Per doz 6. \$325 2-0. \$120. 6. \$325 2-0. \$120. 5. 400 3-0. 16:00 4. 500 4-0. 20:00 3. 6:00 5-0. 24:0 2. 759 6-0. 27:00 1. 9900 7-0. 33:00 0. 10:05 8-0. 42:00 Extra O. K. Varnish Brushes, all White Bristles. No. Per doz. No. Per doz. 8:00 6. \$33:50 2-0. \$15:00 5. 4. 45:00 3-0. \$18:00 4. 6:00 4-0. \$25:00 4. 6:00 4-0. \$25:00 1. 10:00 8-0. 33:00 1. 10:00 8-0. 33:00 1. 10:00 8-0. 33:00 Sash Tools. American Sash Tools.	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No. Per doz. No. Per doz	000000000000000000000000000000000000000
00 00 00 75 50 60 60 60 60 60 60 60 60 60 60 60 60 60	No.	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No.	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No.	000000000000000000000000000000000000000
000000000000000000000000000000000000000	No.	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No.	000000000000000000000000000000000000000
000000000000000000000000000000000000000	No.	000000000000000000000000000000000000000
000000000000000000000000000000000000000	No. Per doz. No. Per doz	000000000000000000000000000000000000000
000000000000000000000000000000000000000	No. Per doz. No. Per doz	000000000000000000000000000000000000000
000000000000000000000000000000000000000	No. Per doz. No. Per doz	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No. Per doz. No. Per doz.	000000000000000000000000000000000000000
00000000000000000000000000000000000000	No.	000000000000000000000000000000000000000
00000000000000000000000000000000000000	No. Per doz. No. Per doz	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No. Per doz. No. Per doz.	000000000000000000000000000000000000000
00 00 00 00 00 00 00 00 00 00 00 00 00	No. Per doz. No. Per doz.	000000000000000000000000000000000000000
00000000000000000000000000000000000000	No.	
000000000000000000000000000000000000000	No. Per doz. No. Per doz.	000000000000000000000000000000000000000
00000000000000000000000000000000000000	No. Per doz. No. Per doz	000000000000000000000000000000000000000
00000000000000000000000000000000000000	No. Per doz. No. Per doz.	
00000000000000000000000000000000000000	No. Per doz. No. Per doz.	
000000000000000000000000000000000000000	No. Per doz. No. Per doz.	
000000000000000000000000000000000000000	No. Per doz. No. Per doz.	
000000000000000000000000000000000000000	No. Per doz. No. Per doz.	
000000000000000000000000000000000000000	No. Per doz. No. Per doz. 6. \$3.25 2-0. \$12.00 S. 4.00 3-0. 16.00 4. 5.00 4-0. 20.00 3. 6.00 5-0. 24.00 3. 6.00 5-0. 24.00 3. 6.00 5-0. 24.00 3. 6.00 5-0. 24.00 1. 9.00 7-0. 33.00 0. 10.00 8-0. 10.00 Extra O. K. Varnish Brushes, all White Bristles. No. Per doz. No. Per doz. 5. 4.50 3-0. 18.00 4. 6.00 4-0. 22.55 5. 4.50 3-0. 18.00 4. 6.00 4-0. 22.55 3. 7.00 5-0. 27.00 2. 9.00 6-0. 33.00 1. 10.00 7-0. 39.00 0. 12.00 8-0. 45.00 Sash Tools. No. Per doz. No. Per doz. 1. \$1.12 5 \$2.44 4. 2.00 8-0. 42.00 2. 1.45 6 2.26 3. 1.75 7 3.22 4. 2.20 8 8 4.22 French Quality—Extra Fine Ground. No. Per doz. No. Per doz. 1. \$1.20 7 3.37 4. 2.20 8 7.00 4. 3.50 9 8.00 5. 4.00 10 10.00 Marking Brushes, 1.00 10.00 Marking Brushes, 1.00 10.00 Marking Brushes, 1.00 10.00 No. Per doz. No. Per doz. 1. \$1.20 1. \$1.20 14. \$2.25 2. 1.30 16. 3.00 3. 1.40 18. 3.00 5. 1.50 9 8.00 5. 1.50 9 8.00 6. 2.20 14.00 7. 3.00 14.50 20.00 27.00 8.00 14.50 20.00 27.00 9.00 14.50 20.00 27.00 3.35 1. 10.00 14.50 20.00 27.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.0	
000000000000000000000000000000000000000	No. Per doz. No. Per doz. 6. \$3.25 2-0. \$12.00 S. 4.00 3-0. 16.00 4. 5.00 4-0. 20.00 3. 6.00 5-0. 24.00 3. 6.00 5-0. 24.00 3. 6.00 5-0. 24.00 3. 6.00 5-0. 24.00 1. 9.00 7-0. 33.00 0. 10.00 8-0. 10.00 Extra O. K. Varnish Brushes, all White Bristles. No. Per doz. No. Per doz. 5. 4.50 3-0. 18.00 4. 6.00 4-0. 22.55 5. 4.50 3-0. 18.00 4. 6.00 4-0. 22.55 3. 7.00 5-0. 27.00 2. 9.00 6-0. 33.00 1. 10.00 7-0. 39.00 0. 12.00 8-0. 45.00 Sash Tools. No. Per doz. No. Per doz. 1. \$1.12 5 \$2.44 4. 2.00 8-0. 42.00 2. 1.45 6 2.26 3. 1.75 7 3.22 4. 2.20 8 8 4.22 French Quality—Extra Fine Ground. No. Per doz. No. Per doz. 1. \$1.20 7 3.37 4. 2.20 8 7.00 4. 3.50 9 8.00 5. 4.00 10 10.00 Marking Brushes, 1.00 10.00 Marking Brushes, 1.00 10.00 Marking Brushes, 1.00 10.00 No. Per doz. No. Per doz. 1. \$1.20 1. \$1.20 14. \$2.25 2. 1.30 16. 3.00 3. 1.40 18. 3.00 5. 1.50 9 8.00 5. 1.50 9 8.00 6. 2.20 14.00 7. 3.00 14.50 20.00 27.00 8.00 14.50 20.00 27.00 9.00 14.50 20.00 27.00 3.35 1. 10.00 14.50 20.00 27.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.00 48.00 1. \$1.20 19.00 29.00 38.0	
000000000000000000000000000000000000000	No. Per doz. No. Per doz.	
000000000000000000000000000000000000000	No. Per doz. No. Per doz.	
000000000000000000000000000000000000000	No. Per doz. No. Per doz.	
000001500000000000000000000000000000000	No. Per doz. No. Per doz.	

Flat Varnish Brushes.

Cedar Handles-ordinary

Per doz. No. 3 inch 3 inch 800 4

Whitewash Heads.

Quality C. This quality is made for ordinary work numbered

Quality X.

This quality is cased with White Bristle,

| Per doz. | No. | S5-25 | 10, 83\(\) inch | ... | 10, 83\(\) inch | ... | 10, 83\(\) inch | ... | 10, 50 | 14, 9\(\) | " | ... | 10, 50 | 16, 10 | " | ... |

Quality XX. sely for family use.

Elastic Quality-

-Fine Ground.

	Quality O. K.
25	Quality O. K. All White Bristles.
50	No. 10, 7½ Inch. \$11.00 \$40, 9 Inch. \$32.00 \$0, 8 16:00 \$0, 10 \$32.00 \$0, 8½ 22:00 \$0, 10 38:00
5()	20, 8 1600 50 10 3 2500
10 50	30, 814 " 22.00
00	
50 50	Corresponds with our Extra O. K. in size an
30	Corresponds with our Extra O. K. in size an length. Made of Gray Stock—numbered by inches.
00	7. Per doz. No. Per doz.
10	736 25:00 9. 47:00
00	No. Per doz. No. Per doz. 7. \$2000 8½ \$3800 7½ 2500 9. 4700 8 3200 9½ 5400
()()	Quality Extra O. K.
Phys	A superior Brush, made of pure White O'Katka
	Quality Extra O. K. A superior Brush, made of pure White O'Katka
le	8
	No. Per doz. No. Per doz. 8
e. 10	Kalsomine Brushes,
10	Super Quality,
0	Corresponds with super quality of Paints.
0	Per doz \$40.00 53 50 66.00
0	All White Property Printle of 7 8
	Por doz
	Per doz.
0	
5.	Whitewash Brushes.
0	Quality X. This quality corresponds with the same brand of
0 0	
0	No. Per doz. No. Per doz.
0	4. 7 " 7.50 12, 9 " 14.00
0	8.8 11 10/50 18 10 11 17:00
	No. Per doz. No. Per doz. 2, 6 Inch. \$1200 . \$
0	This quality corresponds with same brand of Heads.
0	No. Per doz. No. Per doz.
0	No. Per doz. No. Per doz. 4-0 \$16'00 5-0 20'00
0	and a second sec
0	Oil Cloth Brown Brushes
U	No. Per doz. No. Per doz. 11. \$12 \tau 0 22. \$39 \text{-000} 12. \$15 \text{-00} 23, Painted Block 13. \$18 \text{-00} and Handies. \$30 \text{-00}
	12
0	13 18:00 and Handles 30:00
0	14. 21.0 24, Round end, for 16. 24.0 sweeping walls, 48.00
0	17 27.00 25, Extra heavy, for
0	16 24-60 8 weeping walls 48-00 17. 27-00 25, Extra heavy, for 18. 30-00 hotel use. 60-00 20. 33-00 26, Stiff, for carpets, 24-00
-	21 30 UU ; 27, 18 Inch block, for
	banks 72°00
2.	Shaving Brushes.
0	No. Per doz.
0	1
- 1	1 DE
- 1	
0	6. 220 7. 950
0 0	6. 220 7. 950
0 0 0 0 0 0	6. 220 7. 950
i0 10 10 10	6. 220 7. 950
0 0 0 0 0 0	5. 2700 6. 2256 7. 2250 8. 2750 15. White Handle, Wire Bound. 250 25. White Handle, Wire Bound. 300 35. White Handle, Wire Bound. 350 75. White Bone Handle. 550 10. Ribbon. 950
0 0 0 0 0 0	5. 2700 6. 2256 7. 2250 8. 2750 15. White Handle, Wire Bound. 250 25. White Handle, Wire Bound. 300 35. White Handle, Wire Bound. 350 75. White Bone Handle. 550 10. Ribbon. 950
60 100 100 100 100 100 100	5. 2700 6. 2256 7. 2250 7. 2250 15. White Handle, Wire Bound. 250 25. White Handle, Wire Bound. 300 35, White Handle, Wire Bound. 350 75, White Bone Handle. 550 10, Ribbon. 250 20, 350 45, Enameled. 350
60 100 100 100 100 100 100 100	5. 2700 6. 2256 7. 2250 7. 2250 15. White Handle, Wire Bound. 250 25. White Handle, Wire Bound. 300 35, White Handle, Wire Bound. 350 75, White Bone Handle. 550 10, Ribbon. 250 20, 350 45, Enameled. 350
60 10 10 10 10 10 10 10 10 10 10 10 10 10	5. 2700 6. 2256 7. 2250 7. 2250 15. White Handle, Wire Bound. 250 25. White Handle, Wire Bound. 300 35, White Handle, Wire Bound. 350 75, White Bone Handle. 550 10, Ribbon. 250 20, 350 45, Enameled. 350
00 10 10 10 10 10 10 10 10 10 10 10 10 1	5. 2700 6. 2256 7. 2250 7. 2250 15. White Handle, Wire Bound. 250 25. White Handle, Wire Bound. 300 35, White Handle, Wire Bound. 350 75, White Bone Handle. 550 10, Ribbon. 250 20, 350 45, Enameled. 350
60 10 10 10 10 10 10 10 10 10 10 10 10 10	2-00 2-00 7 2-50 7 2-50 7 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2
60 60 60 60 60 60 60 60 60 60	2-00 2-00 7 2-50 7 2-50 7 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2-50 8 2-50 2
00 00 00 00 00 00 00 00 00 00 00 00 00	5. 200 6. 2256 7. 2250 7. 2250 8. White Handle, Wire Bound. 2250 25. White Handle, Wire Bound. 3200 35. White Handle, Wire Bound. 350 10. Ribbon. 250 10. Ribbon. 250 20. 30, 30, 300 30, 400
00 00 00 00 00 00 00 00 00 00 00 00 00	5. 200 6. 225 7. 225 8. White Handle, Wire Bound. 250 25, White Handle, Wire Bound. 350 25, White Handle, Wire Bound. 350 25, White Bone Handle. 550 10, Ribbon. 250 20, 30, 30, 300 30, 400 3
00 00 00 00 00 00 00 00 00 00 00 00 00	5. 200 6. 225 7. 225 8. White Handle, Wire Bound. 250 25, White Handle, Wire Bound. 350 25, White Handle, Wire Bound. 350 25, White Bone Handle. 550 10, Ribbon. 250 20, 30, 30, 300 30, 400 3
20000000000000000000000000000000000000	5. 200 6. 225 7. 225 8. White Handle, Wire Bound. 250 25, White Handle, Wire Bound. 350 25, White Handle, Wire Bound. 350 25, White Bone Handle. 550 10, Ribbon. 250 20, 30, 30, 300 30, 400 3
00000000000000000000000000000000000000	5. 200 6. 225 7. 225 8. White Handle, Wire Bound. 250 25, White Handle, Wire Bound. 350 25, White Handle, Wire Bound. 350 25, White Bone Handle. 550 10, Ribbon. 250 20, 30, 30, 300 30, 400 3
20000000000000000000000000000000000000	5. 200 6. 225 7. 225 8. White Handle, Wire Bound. 250 25, White Handle, Wire Bound. 350 25, White Handle, Wire Bound. 350 25, White Bone Handle. 550 10, Ribbon. 250 20, 30, 30, 300 30, 400 3
2.0000000000000000000000000000000000000	5. 200 6. 225 7. 225 8. White Handle, Wire Bound. 250 25, White Handle, Wire Bound. 350 25, White Handle, Wire Bound. 350 25, White Bone Handle. 550 10, Ribbon. 250 20, 30, 30, 300 30, 400 3
2.0000000000000000000000000000000000000	10
2.0000000000000000000000000000000000000	200 2 200 2 200 2 200 2 2
20000000000000000000000000000000000000	5. 200 6. 2256 7. 2250 8. White Handle, Wire Bound. 2250 25. White Handle, Wire Bound. 3200 35. White Handle, Wire Bound. 3200 35. White Bone Handle. 550 10. Ribbon. 2250 20. 300 300 300 300 300 300 300 300 300 300
2000000 2.000000 2.000000 2.000000 2.000000 2.0000000 2.00000000	5. 200 6. 2256 7. 2250 8. White Handle, Wire Bound. 2250 25. White Handle, Wire Bound. 3200 35. White Handle, Wire Bound. 3200 35. White Bone Handle. 550 10. Ribbon. 2250 20. 300 300 300 300 300 300 300 300 300 300
20000000000000000000000000000000000000	200 2 200 2 200 2 200 2 2
200000 2.00000 2.000000 2.000000 2.0000000 2.00000000	200 2 200 2 200 2 200 2 2
2.0000000000000000000000000000000000000	200 2 200 2 200 2 200 2 2
200000000000000000000000000000000000000	1
2.0000000000000000000000000000000000000	200 2
20000000000000000000000000000000000000	200 2
00000000000000000000000000000000000000	200 2
00000000000000000000000000000000000000	200 2
0000000 z.0000000 z.000000000000000000	200 2
00000000000000000000000000000000000000	10
0000000 z.000000 z.0000000 z.0000000000	10
000000 z.000000 z.000000 z.0000000 z.00000000	10
00000000000000000000000000000000000000	200
0000000 z.0000000 z.00000000000555 z.0000000000555	200
00000000000000000000000000000000000000	200 226 226 226 226 226 226 236 246
000000 2000000 20000000 20000000 2000000	10
0000000	10
2000000 20000000 20000000 2000000 2000000	200 226 226 226 226 226 226 236 246
0000000 20000000 20000000 2000000 2000000	10
00000000000000000000000000000000000000	200
0000000 20000000 20000000 2000000 2000000	200

continues decidedly dull, we hear of somewhat more inquiry and a larger number of transactions, owing probably, in part at least, to the fine weather and the action of Congress on financial questions. The furnace owners are still firm in their refusal to sell largely ahead at present prices, although some concessions are made to purchasers for immediate delivery, and there seems to be cient demand to keep stocks of desirable grades and brands from largely accumulating. Forge Irons are weaker than Foundry, and the price may now be quoted \$27 @ \$28, at furnace. We note the sale of 200 tons Gray Forge, of a Lehigh brand, from second hands, at \$27.50, here. A considerable quantity of Iron has been booked by the companies to be paid for at prices ruling at time of delivery, and some have been sold for season delivery at present prices. The Crane Company still remain out of blast. We notice a sale by them of 200 tons No. 1 Foundry at \$35. We quote No. 1 Foundry, \$35 @ \$36; No. 2, \$32 @ \$33; 16'00 | Gray Forge, \$29 @ \$30.

Scotch Pig.-The Glasgow market has been unsettled by the failure of Watson, Campbell & Co., with liabilities to a large amount. It is reported that they were under large contracts for Bar and Pig Iron in both Scotland and the Per doz.
....\$875
North of England. Labor was growing more 959
and more unsettled at last mail advices, the Iron masters insisting on a reduction of 2/per day, while the men want to compromise for 1/. With apprehensions of further trouble, the Coltness Iron Company had dampened down Per doz. Coltness Iron Company nan tamped their furnaces, 13 in number, and several their furnaces, 13 in number, and several smaller concerns were preparing to do the same thing. Transactions here have been small, and but little change in quotations, which are: Coltness, \$40 @ \$41; Glengarnock. \$39 @ \$40;

Rails, but as yet there has not been much business done. We note the sale of 500 tons English at New Orleans at \$59, gold. There have been no recent sales of English in this market, and in the way of quotation we can only say that they are freely offered at \$55, gold. American may be quoted at \$59 @ \$60.

Old Rails—We quote \$40 @ \$41, a price at which they can be bought, though there are a a trifle better. Our quotations remain with-Old Rails-We quote \$40 @ \$41, a price at good many held for a higher price. We note sale of 1000 tons in Chicago, at \$35, time and \$5 to \$6, by the cargo, and for Gas Coals the interest. Also, 300 tons on private terms.

Scrap .- There is but little to report in regard to Scrap, which we quote \$41, from yard.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)
Up to the hour of going to press (5 a. m. Thursday, April 2), our usual cable dispatch has not reached this office.

METALS.

Copper.-The market has been moderately active during the week, the sales, Lake and Detroit, summing up 550,000 pounds, including 200,000 Lake, the last few days, at 24%c., and from dealers' hands 25c. has been made since, at which figure the metal closes with great firmness, although quiet. Yesterday's cable quotation from London, was £83 for Best Selected, and £76, Chili Bars, which is a fresh decline Messrs. White & Haskell give us, in advance, from their monthly review, the following "Copper early in the month sold at 241/cc. and 24%c. for Lake. Free sales, however, by parties interested in lower prices, carried the market to 24c. Upon its becoming known, that almost all outlying lots had been sacrificed for the purpose of affecting the market, in order to buy for spring and summer deliveries, consumers and dealers comprehending the situation, immediately bought all parcels offering, comprising 1,000,000 pounds Lake, and about 500,000 pounds Tennessee at 24c. and 241/4 c Since then the market has advanced steadily with sales of about 500,000 pounds, up to our present quotation, viz.: 24%c. bid, and 25c asked for Lake. About 150,000 pounds Lake cakes have changed hands, being scarce, at 25%c. to 26c., cash. The energy displayed in pressing Copper for sale during the month has had the contrary effect to that desired or ex-pected, as with smaller stocks than the average of former years, the market is now controlled by a few, and the probable wants of consumers are the only means of judging as to the course of the market for the next 60 days. The demand for consumption has steadily improved during the month, and should it continue we must expect higher prices." Manufactures of Copper have been steady as follows: Copper Bolts, 35c.; Sheathing (over 12 oz), 83c.; Bra ziers' (over 16 oz.), 35c. Yellow Metal is well supported at 24c. per pound for Sheathing, and 30c. per pound for Bolts.

-The continual decline in Europe is a subject of general comment in trade circles, precipitated as it is by the strikes in Wales, now actually begun, as the cable informs us. The London quotation of yesterday was £90, cash, for Straits on the spot, £88 @ £86 for April and May futures. Sales of the week 900 cent. in the production of coal in the United Slabs, 30 tons, spot and to arrive, part Straits and part English, at gradually receding figures. The following is from the circular above alluded to: "Tin, with fair demand, but falling prices throughout the month, closes dull. European advices are unfavorable, and the decline in all kinds has been rapid and heavy, Straits opening at 261/4c., gold, touching 24c. on the spot, with sales of parcels due in April and May at 23c; English Refined selling down from 23%c. @ 23%c. from store, and 22c. to arrive. L and F, in which a fair business has been done, has gradually receded from 23c., on ing in the aggregate to not less than, probably, the spot, to 211/c. @ 211/c., and to arrive, from 22c. @ 201/c. It is still offered at 201/c. for this additional quantity, and to transport it to April and May shipment, but even with but a market in the ensuing ten years, the reader can small stock of all kinds on hand, there is little form some idea of the adultional capital that disposition to operate in the article, while there is so much uncertainty as regards the future.' We quote at the close : Straits, 241/4 c.@ 241/4 c. gold; English Refined, 22½c.; and Lamb and Flag, 21½c. Animproved feeling is noticeable in more than probably 13,000,000 tons in addition Tin Plates, now sparingly offering in consequence of the Welsh strike, but no actual adquence of the Weish strike, but no actual advances of the wrote has as yet been established. Sales of the week have been 750 boxes assorted Charcoal Trin at \$10.25, 550 Coke Tin at \$8.0 \$8.25, and \$0.00,000 tons annually, and of this quantity not less than 7,000,000 or 8,000,000 tons and the regions, leaving will be consumed within the regions, leaving will be consumed within the regions, leaving only about 26,000,000 tons to be consumed to the second terms of the consumed within the regions, leaving the consumed within the 250 Charcoal Terne at \$9, gold. We quote at the close: I. C. Charcoal, \$10.25 @ \$10.30; I. C. Coke, \$8 @ \$8.25; Coke Terne, \$6.75 @ \$8; Charcoal Terne, \$9 @ \$9.75, all gold.

Lead .- None but trifling sales have trans We quote, nominally, ordinary foreign pired. brands, 61/c. @ 65/c., gold, and fine ditto, 7c. @ 71/c.; while ordinary domestic is at 61/c., all gold. From the monthly review referred to in our articles on Copper and Tin, we extract the following: " Pig Lead .- Prices have remained during the month with but little alteration from those of our last issue. Foreign has been neglected, but in domestic considerable business has been done at a trifle off from our last quotations. The market abroad shows lower prices. which have had their effect here. We quote at which have use: foreign, 61/4c. (@ 65/4c., gold, for round lots." domestic, 6c. (@ 65/4c., gold, for round lots." Messrs. White & Haskell add the following general remarks to their circular: "The month peneral remarks to their circular: "The month consumption of the consumption general remarks to their circular: "The month has seen a marked improvement in the consumption of almost all metals, which for the past six months has been at a minimum, although prices are by no means satisfactory either to the importer, dealer or manufacturer." We, at the same time, quote: Bar, 8½c.; Sheet and Pipe, 9c., and Tin Lined ditto, 16½c.; discount to the trade, 10 per cent. We are informed, by cable, that common English Lead closed last week at £23. 5 per ten.

Iron, but there is certainly a better feeling.
We quote 3 @ 3 3 cents per lb., the latter being an extreme figure not often reached.

Rails.—There seem to be more inquirnes for Rails, but as yet there has not been much busi-

COAL.

The coal market has been very dull this week.

Prices of Anthracite are about the same as quoted in our last report, but business is expected to revive when navigation is fully respected to revive when never the revive when the revive when the revive when the revive when the revive w Prices of Anthracite are about the same as quoted in our last report, but business is expected to revive when navigation is fully re-pected to revive when navigation is fully re-field A. & Co Mdsc. pkg out change. The quotations for Anthracite are

out change. The quotations for Anthracite are \$5 to \$6, by the cargo, and for Gas Coals the rates are: West Virginia, \$8:50; Cumberland, soft, \$7 to \$7:25 per ton.

The demand for foreign continues limited, and the market is quiet. The quotations are as follows: Liverpool house cannel, \$20; Liverpool gas, \$11; Newcastle gas, \$9; Scotch, \$11.

The coal shipped over the Cumberland Branch Railroad during the week ending March 28, 1874, amounted to 2910 tons, as against 2485 tons transported in the same week last year, showing an increase of 425 tons; over the Cumberland and Pennsylvania Railroad for the same period the shipments were 27,807 tons, against 34,818 tons shipped in 1873, a decrease. against 34,818 tons shipped in 1873, a decrease of 7011 tons.

The fire in the Empire Mine, near Wilkesbarre, Pa., is not yet subdued. The loss of the ompany thus far is over \$400,000.

The Pottsville Miner's Journal publishes the ollowing interesting figures and estimates of the production and consumption of Coal in the United States:

Taking the official returns of the production of Anthracite Coal in the United States in 1873, together with the official returns of the Bituminous Coal produced and sent toward the seaboard, and from former data, estimating the balance, we give the following as the total Coal production in 1873: Anthracite sent to market ...

7	Anthracite consumed in regions	3,243,000
t	Total production of Anthracite	22,828,118
	Bitummous Coal sent toward seaboard, embraced in our table	6,085,222
r	Estimated production of Bituminous Coal not embraced in our tables	16,500,000
e e	Total production in 1873 Foreign Coal imported	45,413,340 456,015
n	Total Exported	45,869,355 584,633
8	Total supply for consumption in 1873 It will be seen by the above figures	
e	quantity of Anthracite and Bitumin	
	produced were nearly equal, as follows	1:
e e	Total Anthracite	22,828,118 22,585,222
-	Total	45,413,340
d.	In 1865 we commenced estimating t	he quan-
e	tity of Bituminous Coal produced in th	e United
f	States from the regions not embrace	d in our
r	table, and we have put down the produ	uction of
1-	Coal in this country as follows since 1	

1868 1869 1870 1871	 		 	 		 	 28,855,9 28,361,0 31,479, 33,761,0 86,622,								
1868 1869 1870 1871	 		 	 		 	 28,855,1 28,361,1 31,479,1 33,761,6 86,622,1 37,861,4 42,749,1								
1868 1869 1870 1871	 		 	 	* ' * * .	 	 28,855,9 28,361,8 31,479,3 33,761,6 86,622,37,861,4								
1868 1869 1870	 		 	 	* ' * *	 	 28,855,9 28,361,0 31,479, 33,761,0 86,622,								
1868	 *		 	 		 	 28,855,9 28,361,8 31,479, 33,761,6								
1868	 			 				 				 	 	 	 28,855, 28,361, 31,479.
ECHO E		٠,	*										 		28,855,9 28,361,
1867										 			 		
1866	 			 											
1865	 									 					24,400.0
1864	 			 			 			 			 		Tons 22,500,0

States within the last ten years, and if the same ratio of increase should continue for the en suing ten years, the consumption in 1883 would reach 90,000,000 tons; and there is no reason why the same proportionate increase should not continue for a number of years to come, as wood is now becoming scarcer every year for fuel, and but few use it when they can procure coal as a substitute.

The investments in the coal business to produce 45,000,000 tons of coal annually, and to carry the same to market, is immense, amountfive hundred million of dollars, and to produce will be required to furnish that quantity for onsumption.

Of this increase in the supply of fuel the to what they now produce, as we do not believe the whole product of Anthracite will ever about 26,000,000 to 27,000,000 tons to be sent to market, against the 19,585,178 tons sent in 1873. This would leave about 32,000,000 tons increase to be furnished from the Bituminous regions of the country in addition to the present supply.

OLD METALS, PAPER STOCK, &c.

Dealers in junk complain of dullness in busi ness. The only change we have to note is in Canvas Cotton, No. 1, which has advanced 1 cent per pound. The scarcity of these goods in the market is the cause of their appreciation in value. There has been a better demand for White Linen Rags this week than for some time time past. Old Metals are freely bought at our

has seen a marked improvement in the consumption of almost all metals, which for the past six months has been at a minimum, although prices are by no means satisfactory either to the importer, dealer or manufacturer." We, at the same time, quote: Bar, 8½c.; Sheet and Pipe, Sec., and Tin Lined ditto, 10½c.; discount to the trade, 10 per cent. We are informed, by cable, that common English Lead closed last week at 423. 5 per ten.

Spelter and Zinc.—Sales of Spelter since our last, 65 tons foreign and 25 domestic, within our quotations. The past few days, however, nothing has been done, and our quotations have

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending March 31, 1874:

> Hardware. Bundles, 22 Order. Rails, 5196 Fish plates, 248 Pig. tons, 250 Bars, 1595 Steel. Steel.
> Congreve Chas. & Son,
> Rails, 1937
> Drexel, Morgan & Co.
> Steel rails, 143
> Jackson R. D.
> Bundles, 219
> Naylor & Co.
> Cases, 48
> Bars, 8
> Piersons & Co.
> Bundles, 147
> Boxes, 1
> Vose, Dinsmore & Co.
> Bundles, 20
> Bars, 3

Bundles, 20 Bars, 3 er. Order.
Bundles, 166
Rails, steel, 4108
Scrap, tons, 85 Metals.

Byrnes Joseph & Co. Tin plates, bxs., 1374 Bruce & Cook, Bruce & Cook,
Tin plates, bxs., 828
Gomez & Munjo,
Scrap copper, bxs., Schuyler, Hartley & Graham, Mdse. pkgs., 114 hweitzer Mfg. Co. Howell Jesse. Casks, 2 Strasburger, Pheiffer &

Scrap copper, lbs., 3538 Scrap yellow metal, lbs., 1960 Jex Wm. Strasburger, Co.
Co. Coses, 2
Schoverling & Daly,
Mdse. pkgs., 1
Von Cleff & Co.
Cases, 9
Ward A.
Mdse. pkgs., 4
Order. Jex Wm.
Scrap, cks., 1
Lamarche H.
Zinc, bbls., 61
Morton, Blies & Co.
Tin plates, bxs., 508
Phelps, Dodge & Co.
Tin plates, bxs., 4578
Mdsc. pkgs., 4
Recknagel & Co.
Gun metal, pkgs., 3
Order. Order. Chains, cks., 10 Cases, 5

PHILADELPHIA.

The market is particularly dull and flat, and

the only evidence of future improvement is in a

little stiffer tone of prices and the expectation

on all hands of a speedy revival of trade with

the settlement of the currency question. The

volume of business is, however, very small, and

prices almost nominal. The only activity

noticeable is in low grade Pig metal, generally

Forge Iron, in which there have been consider-

able transactions for pipe works, to mix with

Foundry Irons. Foundry Pig is of slow sale,

except at prices which furnace companies will not entertain. The views of a "Pig Iron Pro-

ducer," published in The Iron Age of last week,

are generally thought to be erroneous, or writ

ten with the design of bearing the market. The

adoption of the course proposed, viz., reducing

production one-half, would, it is thought, give

us Pig Metal at \$50 before midsummer, if any

trade springs up. It is stated, on reliable au-

thority, that the price of ores as well as that of

labor has been materially reduced, while coal is

no dearer than previously, and that hence Pig

Metal can be, and probably is, made at lower

Reliable statistics of the consumption of Pig

Iron, are more needed now by the trade than

efforts to advance prices by curtailing blast

Pic Iron.-No. 1 Foundry, \$35; No. 2, \$32

The sales, which have been small, include

ome 3000 to 4000 tons low grade Ferge Pig to

pipe works at \$26, here; 1000 tons Nos. 1 and

New Rails at \$60, and 1200 tons Old Rails at

The market is very quiet, with prices pretty

firmly maintained.

Messrs. Blakiston & Cox, \$33 Wainut street, under date of March 30, write as follows: The Iron business for the month past has not changed from the dullness that characterized it through the months preceding, and there is but little prospect of a revival soon. It is hinted by those whose hopes are not utterly blasted, that when the financial riddle at Washington is solved, a firm market and advancing prices will be the result. There are others whose opinions are of weight, who anticipate no reaction be.

hear of no transactions. Old Rails are not in much stock, but the demand is light. We quote sale of 100 tons, equal to \$41 here. Scroontinues as last quoted, and little is doing. We quote sale of No. 1 Cast at \$26, cash.

PITTSBURGH.

PITTSBURGH, March 28, 1874.

Foundries at about quotations; 1000 tons

which transactions are being made:

RAILS-American at works, \$60 to \$65.

o \$33; Gray Forge, \$28 to \$30.

BARS-3.2c. to 3.3c. Ler lb.

OLD RAILS \$41 to \$42.

SCRAP-\$41 to \$42.

firmly maintained.

\$42.

cost than in 1873.

furnace production.

PHILADELPHIA, March 31, 1874.

Iron Brown Bros. & Co. Bars, 11,105 McColl Duncar, Scrap, lots, 1 Order. Tin plates, bxs., 275 Lead, pigs, 1632

their best Forge Irons at \$28, cash, and \$29 time, and some are still refusing to sell for less about cover the actual cost of Pig made by furnaces in this immediate locality, and that those west of here, in the Mahoning and Shenange west of here, in the Mahoning and Shenango districts, are losing at least freight and commissions, say \$2 to \$3 per ton. Buyers are still bearing the market, notwithstanding it is down below actual cost, and sellers complain that when they do make concessions, that buyers lower their bids accordingly; hence, there has been a difference of from \$1 to \$3 per ton between them all season. When producers were holding their best Mill Irons at \$32 to \$33, 4 mos., consumers were bidding \$29 to \$30, and now the former are willing to sell at the last named quotations, but buyers are now bidding \$27 to \$28, and very likely if they were offered it in any considerable amounts at the last named rates, they would drop down to \$25 to \$26. The inquiry very naturally arises if the furnacemen are actually losing money, if current rates, as stated, do not cover the actual cost of making the article, why don't they blow out and stop making it? But some of them are so situated that they cannot afford to stop. They have their ore bought, which must be paid for, and many other expenses which cannot be choked off on the instant; and as their product is the only thing they have to raise money on, they must sell, and, in a manner, they are at the mercy of buyers. Those producers who are able to hold are doing so. Some have already blown out, and others will do likewise as soon as they have worked up what ore they have contracted for, and the probability is that unless there is a very decided change in the position of the market within the next thirty days, many of the furnaces now in blast will blow out. There is no question but what there has been an over-production during the past year. This is evident from the large surplus still in the hands of producers, as well as the fact that it is very difficult to sell even at less than the actual cost of making it.

MANUFACTURED IRON.—The market, for all kinds of finished Irons continues fairly active, while it is true that orders are not coming in as freely as they did a month or six weeks ag districts, are losing at least freight and commissions, say \$2 to \$3 per ton. Buyers are still

three cents are charged. The reduction in the cost of Pig has not increased the margins of our manufacturers any, as the product is being dropped accordingly, although there is this about it—the very low price of the raw article has enabled our manufacturers to undersell all competing points, and the result is that while business has been and continues dull elsewhere, many of the mills being stopped, our mills have had all they could do ever since early in the winter, and the indications are that this will continue during the balance of the season.

NAILS.—There is a continued active demand for Nails, both here and at Wheeling, and not withstanding the factories are running to their full capacity, there is no accumulation, and prices are fully sustained—four dollars and two per cent, discount for cash. We have had good river navigation, almost without interruption, since last fall, and there is no doubt but what trade has been stimulated considerably by low freights.

STEEL.—Trade continues active in this important branch of mamufacture. All the busy are reported as working to their full capacity, and there is less cutting in rates than in Merchant Iron. The demand, just now, is mainly for the finer grades used in the manufacture of tools and agricultural implements.

COPPER.—The demand for Manufactured Copper, while it is a little more active than it was in the winter, and some pretty good sized orders have been booked recently, yet trade is far from busy, while prices have undergone no change for some time. There are two Copper Mills here, one owned by Parke & Co., and the other by C. G. Hussey & Co.

WROUGHT TUBING.—Trade continues to improve steadily, orders are increasing, and the Metal and Scrap, as well as of Manufactured The following prices represent the rates at

other by C. G. Hussey & Co.

WROUGHT TUBING.—Trade continues to improve steadily, orders are increasing, and the outlock is regarded as being iavorable for a great spring and summer trade. The discount on the new list is 25 per cent.

Locks, Scales, Knobs, &c., &c.—The Jacobus & Nimick Manufacturing Company report an active demand for the articles above named, as well as "Novelty goods" generally, and the probability is that it will continue so all summer.

COAL AND COKE.—The market for both of these important staples continues in an unsettled and unsatisfactory condition, as there seems to be an over supply, hence there is no margin for profit. Operators, generally, will feel well satisfied if they can close the season without coming out behind.

PETROLEUM.—There is no improvement to note in regard to this article. Most of the refineries are still idle. Some of them have been doing little or nothing this year. Present rates of Refined do not, it is said, cover the actual cost of making it.

nace men will want to continue in operation, if they are obliged to sell below cost. We are re-ported the following sales:

remain as last quoted. The managers of the Crane furnaces speak of resuming, and it is probable that two or more stacks will be blown in shortly. This company will resume with comparatively little Iron in stock, and it is believed have some orders to fill, taken recently. The Emaus furnace, it is expected, will blow in soon, and thus add to the already too large production. There have been sales of some 1200 tons No. 1 (Lehigh brands) made during the week at average price of \$34-50; terms and delivery are mostly private. In Rolling Mill Irons there is little doing, but prime brands are not obtainable in large quantity. We quote No. 1 at \$34 to \$35, No. 2 Foundry at \$33, Gray Forge at \$31 to \$31-50, White and Mottled at \$26, the latter quotation being at the furnace. Scotch Fig.—The business is limited to sales in small lots at, for Egilnton, \$43, Glengarnock at \$44. Merckant Bar.—The prices are not changed, and may be given at 31-10c. as a base. The mills still continue busy, but the profits are complained of by manufacturers. New American Rails are held at \$63 to \$65, at works. We hear of no transactions. Old Rails are not in much stock, but the demand is light. We 28.00-4 mos. CONNELLSVILLE COKE. t00 tons Gray Forge 100 tons Gray Forge Neutral ANTHBACITE.

900 tons Chickies No. 1 Foundry, at 90 tons No. 3 Forge... 20 tons No. 2 Foundry CHARCOAL 30 tons No. 1 Neutral...... 10 tons No. 3 Red Short....

Pig Iron during the past week, the reported sales having been unusually large, but at lower range of prices. Commission merchants state that at \$27, cash, and \$28, 4 mos., they could have placed a good deal more than they did, but producers, as a rule, are still holding

than \$29 to \$30. It is said that \$27 to \$28 just

freights.
Steel.—Trade continues active in this im-

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

\$2700—cash. 2700—4 mos. 2800—4 mos. 2800—4 mos.

MUCK BAR. 100 tons Muck Bar..... \$47.00—cash

AMERICAN REFINED BAR IRON. AMERICAN REFINED BAR IRON.

1 to 6 wide by ½ to 1 thick... { 3½c. to 3½c. per B. Round and square, ordinary sizes. from ½ to 2 thick. } 8½c. to 3½c. "

Hoop Iron, 1½ wide and upward... 4½ to 5c. per lb. Band Iron, from 1½ to 4 in. wide... 4 to 4½c. "

Horse Shoe Iron ½ to 1 wide by ½ to ½ thick... 587½c."

Norway Nail Rods... 7½ to 8 c. "

Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes... 10½c.
Machinery Steel... 11½c.
Cast Spring Steel... 11c. "

Homogeneous Steel Plate... 13c. "

Mule Shoes " " 687½

Common Horse Noses, per keg of 100 lbs... \$587½

Common Horse Nails, from 14c. to 18c per pound.

ST. LOUIS.

Messrs. Garrett, McDowell & Co., under date of Mar. 28th, send us the following: The Pig Iron market continues dull. Some of our largest buyers, evidently believing bottom prices have been reached, placed their orders for round lots of Foundry Irons the past week. We make no change from our last week's quotations.

HOT BLAST STONE COAL

No. 1 Foundry, from Iron Mountain and Maramec Ores. \$34.00 @ 35.00 No. 2 Foundry, from Iron Mountain and Maramec Ores. \$20.00 @ 38.00 No. 1 Forge, from Iron Mountain and Maramec Ores. \$20.00 @ 31.00 @ 31.00 HOT BLAST CHARCOAL. No. 1 Foundry, from Iron Mountain and Maramec ores.

No. 2 Foundry, from Iron Mountain and Maramec Ores.

No. 1 Foundry, from Tennessee ores.

No. 1 Forge, 86-00 @ 48-00

COLD BLAST CHARCOAL.

LOUISVILLE.

Mr. Geo. H. HULL, under date of March 30, writes us as follows: The market is dull for all grades of metal, and prices are unchanged. The usual time, four months, is allowed on quotations below :

HOT BLAST CHARCOAL No. 1 F'dry, from Hanging Rock Ores. \$38.00 @ 40.00 1 Forge, 38 00 @ 38 00 1 Forge, 38 00 @ 38 00 2 1 Forge, 38 00 @ 38 00 2 2 1 Forge, 38 00 @ 38 i Forge, 1 F'dry, from Alabama Ores. 35 00 @ 38 00 1 Tron Mountain Ores. 41 00 @ 42 00 from Missouri Ores.... " I Forge, COLD BLAST CHARCOAL, Car Wheel from Hanging Rock Ores. 60-00 @ 63-00
Tennessee Ores. 53-00 @ 55-00
Alabama Ores. 55-00 @ 57-00
Georgia Ores. 55-00 @ 57-00
Georgia Ores. 55-00 @ 57-00
Kentucky 55-00 @ 57-00

CINCINNATI.

Messrs. ADDY, HULL & Co., under date of March 30, write us as follows: The market remains in a very quiet condition, the demand for all grades being extremely limited. Prices nominally unchanged.

HOT BLAST CHARCOAL. Hanging Rock No. 1. \$\mathbb{T}\$ ton. \$\mathbb{S}\$ 800 \(\text{ } \) 40 \(00\) 4 \(\text{ mos.} \) \\ \text{ '' No. 2 } \quad \text{ 35 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ '' Forge} \quad \text{ 30 \cdot 00 } \text{ 32 \cdot 00 } \text{ 4 mos.} \\ \text{ Tennessee No. 1 } \quad \text{ 35 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ Forge} \quad \quad \text{ 30 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ Alabama No. 1 } \quad \quad \text{ 35 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ Missouri No. 1 } \quad \quad \text{ 35 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } \text{ 37 \cdot 00 } 4 \text{ mos.} \\ \text{ 15 \cdot 00 } HOT BLAST STONE COAL.

COLD BLAST CHARCOAL.

FOREIGN.

GREAT BRITAIN. Messrs. J. Berger Spence & Co., London, Glasgow and Manchester, under date of March 14, 1874, report : be an over supply, hence there is no margin for profit. Operators, generally, will feel well satisfied if they can close the season without coming out behind.

Petroleum.—There is no improvement to note in regard to this article. Most of the refineries are still idle. Some of them have been doing little or nothing this year. Present rates of Refined do not, it is said, cover the actual cost of making it.

The Pittsburgh Commercial of the 28th, says: Since the last week in January the market for Pig metal has been very dull, and the sales were limited entirely to lots required to keep up mixtures. Last week we referred to the indications of a willingness on the part of some producers to meet the views of buyers as to prices, and we learn that during this week some of them have come together, and that several sales of round lots, in addition to those reported below, have been made at prices ranging from \$26 to \$27 per ton, cash, delivered here. It is conceded on all hands that these prices are considerably below the cost of making the Iron, and unless the price advances must soon lead to a curtailment of the production, as but few furnace men will want to continue in operation, if they are obliged to sell below cost. We are relowing the week, and it is impossible to meet keek, and it is impossible to predict the future, as producers affirm they are own unable to work that any subscience and it is impossible to required, or else resort of truther, as specially for Iron, has shown no signs of melloration during the week, and it is impossible to predict the future, as producers affirm they are own unable to work that now and it is impossible to predict the future, as producers affirm they are own unable to work that now and it is impossible to predict the future, as producers affirm they are own unable to work that now and it is impossible to reported the future, as producers affirm they are own unable to work that now and unless some arrangements can be made for the supply of raw products at leaser rates (which a

large būsiness has been done at £19, 15/.

IRON—"Ayresome" Yorkshire Pig Iron, prices
nominal, No. 1, —; No. 2, —; No. 3, —; No. 4
(Foundry), —; No. 4 (Forge), —, net cash, or 2/
extra 4 months' bills. Scotch Pig warrants 92/6 to
95/. Staffordshire Bars, £12 to £14. Hoop Iron, £13
to £14. Gas Tubes, 60 per cent, off list. Boiler
Tubes, 37% per cent. discount.
COPPER.—English Tough Ingot, £88 to £90. Chili
Bars, £79 to £80.

TIN—English ingot, nominal, £103 to £105. Straits,
£94 to £95.

TIN PLATES.—Best Coke, I. C., 28/ to 30/; Charcoal, I. C., 36/ to 40/ per box.

LEAD.—Best Coke, I. C., 28/ to 30/; Charcoal, I. C., 36/ to 40/ per box.
LEAD.—Best English Soft Pig, £22, 10/ to £23.
Refined Red Lead, £26 to £27.
ANTIMONY.—French Star, £33 to £54.
SPELTER.—Silesian, £23, 10/ to £24. English, £23 to £24.

FRANCE.

FRANCE.

(Moniteur des Interets Materiela.)

Paris, March 15, 18s Interets Materiela.)

Paris, March 15, 18s Interets Materiela.)

Paris, March 15, 18s4.—Metals—The general condition of the European metal markets is far from being a satisfactory one. Notwith-tanding the most liberal concessions made by holders, business remains insignificant. Speculation barely gives a sign of vitality, nor are there any indications that relief will come from any quarter shortly. Copper—The tendency in Europe is still downward, London only forming an exception yesterday, the market there being firm at 279 to 289 for good ordinary brands of Chill Bars; B st. 280 to 281; Urmeneta Ingots, from 290 to 291, nominally; Australian, 287. 10/ to 288; Tough Cake and Ingots, 287 to 288, and Best Selected Ingots, 289; Yellow Metal, 83d, per pound. Paris is quiet at 295 francs for Chill bars—Havre at the same figure. Marseilles is languid at 205 francs for Spanish. Hamburg is listless at 122 marks for Lake Ingots. Berlin sustained at 293/ to 303/c thalers.

appril 2, 1874.

THE IRON AGE.

against in insortive at 51 to 8. The Dunch market lase lase for finite at 20 to 8 for Dranchina, and a least for the control of the control

BRIGHUM.

(Le Commerce.)

BRUSSELS, March 14, 1874.—Iron.—The market seems to be looking up. Our works have received some orders during the week, spreading greater hopefulness among makers, who now look forward to a more general revival at no distant day. Prices show greater firmness at both our industrial centers, but taking into consideration the unsettled state of the Euglish labor market, our manufacturers keep prices at an even level, so as not to frighten away customers. They act wisely, no doubt, in following such a policy, and move off what they have on hand, ere perchance general strikes in England paralyze the whole machinery of trade one more, slowly recovering as it is in Europe from the effects of a protracted industrial crisis. While this is taking place, all our Iron establishments are either repairing their working material or extending their workshops and appurtenances. The productive capacity of Belgium for the current year will be a greatly enhanced one, and, thanks to perfected methods and novel inventions, the quality of what we shall produce will compare favorably with that of former years. We shall thus recover our prestige in foreign countries. Coal.—The decline at Liege has been arrested, but we do not perceive any material improvement in the demand. The signal for some amelioration has to come either from England or from Chaleroi. The Hainaut collibries sell in the Grand Duchy of Luxembourg, guaranteeing a reduction, should Coal prices decline later on, or to be fixed monthly upon the basis of average value. The rules thus laid down could not well be more liberal, yet purchases are not much enticed by them.

spot, has been done at 63 to 62 guilders; celivery from fais month's sale. 63% to 62; and from the May sale at 62 to 61%. Billiton, spot, brought 61.

CANTON, Feb. 4, 1874.—The improved tone of the metal market, which we reported in our last, has been of but short duration. Native dealers are again holding off from purchases, and the business done has been on the most trilling scale. Nati Rods have found buyers to a small extent at former values. English and Swedish Bar Fron has not received any notice, and quotations are nommal. The position of Hoops has not changed. Prices of Iron Wire have not been maintained, and at the close sales could be effected only at a reduction or concession to buyers. Steet has held its own, and a fair demand continues to prevail. A sale of 1000 tubs has been effected at \$5.20 per tub. Lead has sustained a further decline. L. B. has been sold to arrive at \$7.75 per picul, and the market closes with a downward tendency, owing to heavy prospective receipts. For Tim Picules a trilling inquiry has been experienced, and sales have been made at previous rates. The still attracts a fair degree of attention, and closing prices exhibit a further improvement of 50 cents per picul. Quicksilver is also higher in value, and the market closes with a strong upward tendency. Buyers are disinclined to pay the advance demanded, and business is thus restricted to immediate wants. Yellow Metal—The feeling in the market is still toward stiffer rates, but no sales are recorded. (Arnhold, Karberg & Co,)

PHILADELPHIA CORRESPONDENCE.

who help themselves," in Centennial as well as other matters, gave expression to that feeling at the meeting on the 26th inst. This was the largest meeting held in this city since the war, and was extremely enthusiastic, as well as practical in its action. The attendance included large delegations of workingmen from the principal establishments, all of whom were earnest in their desire for the exhibition to succeed. The result of the meeting will be that this city and State will subscribe at least five millions for the purpose, and if other aid is not extended, will furnish the whole amount necessary. A practical method of hastening the object would be to secure some well known firm in the erection of the building by the joint guarantee of leading citizens, and allow them to proceed at once with it. Such a firm as the Phœtix Iron Company could easily contract for the whole work, and would possibly be willing to undertake it, if only secured for their ultimate pay. The effect of the meeting was, however, to give a rapid impetus to subscriptions, which have been pouring in ever since, and also to put a much more favorable complexion on the Centennial situation at Washington, giving promise of an appropriation yet.

Mentioning the Phœnix Iron Company sug-

roadways and two railroad tracks for cars, the whole under the control of the city as to what railroads shall use them. The footways will be of slate, with a border of encaustic tile. The bridge proper you have hitherto described. The work is in full keeping with the excellence of all the products of the Phoenix Bridge Works.

Works.

The impulse given to our export trade by the establishment of a direct line of steamers from this port, is shown by the fact that for the week ended Saturday, March 27, the value of the exports from here were \$644,947, against \$339,279 in the previous week. Included in this total was \$212,000 worth of iron machinery, in which is enumerated seventy mowers and reapers of American make. Here is a text for a sermon in political economy which draws its own deductions.

A determined effort is being made by our re-

A determined effort is being made by our re-A determined effort is being made by our reformers to compel our horse railway companies to comply with their charters, keep the streets in repair, and reduce the fares. For this purpose a report has been prepared by Mr. Henry Carey Lea, giving the receipts and expenses of these roads, and showing that they have never earned less annually than 10 per cent. on their capital, and many of them as high as 40 per cent. The figures are taken for a series of years, those here given being for 1872, when the companies were supposed to have suffered severely from the epizootic among their horses. This

result of 45 tons carbonized peat is attained. To dry out the 360 tons water will require one-eighth of that weight of fuel, or 45 tons, leaving 90 tons dried peat. To carbonize this 90 tons dried peat will require more than 25 tons additional fuel, and the result of this operation is 45 tons peat coal at a cost of 70 tons fuel, or 90 tons dried peat at a cost of 45 tons fuel.

It is not possible that this system is in sucessful operation anywhere; it will carbonize peat but at a cost of fuel alone greater than the product.

As a kiln to carbonize dry peat it would work as well, doubtless, as any other, but it claims and boasts its estimates in treating wet peat. Here is just the difficulty heretofore encounbered, to wit, to get clear of the water economically, and this machine does no more to solve it than many before-indeed not so much as some

The radical faults of the system are these: First.-Peat when in blocks or forms is a very pad conductor of heat, and when subjected to a drying agency, as here, in forms, the outer surface will dry rapidly and form a crust, through which surrounding heat will penetrate but slowly. If the heat be too great this outer layer will contract rapidly and the whole mass will disintegrate.

for any quantity of consideration.

Third.—The vapors of the expelled moisture and the combustible volatile matters cannot be utilized in this system, without which utilization the fuel cost is greater than the product. Now, if we turn to your issue of March 12, we find Mr. Walker's process described, which meets and overcomes these obstacles.

Here the operation of drying is rapid and continuous; the drying temperature high, 400 degrees for dried peat, and 750 degrees for carconizing it. The material, when subjected to the drying, is not yet in form, and therefore the thorough disintegration it encounters is a benefit as serving to break up most completely the fibre and any woody matters contained in it.

The passage of the material through the

PHILADELPHIA, March 80, 1874.

Every one who does not run a national bank, or labors under the insane delusion that the country cannot prosper save under a specie currency, is rejoicing over the action of Congress in giving us, at least, something definite steam is condensed, and its latent heat deposited in and taken up by fresh wet peat, thus
utilizing more than three-fourths of the heat
the evaporation of the solution.

The carbonic acid is produced by means of two cupolas, one containing coke and the other
the late Vienna Exhibition. They are, of

ombustion will afford all, or nearly all, the practical and lucrative. additional heat required to keep the coil of peat for charring. Respectfully, E. H. C.

Novelty in Shoe Brushes.

Among the new goods offered to the trade by the C. W. Maguire Brush Company, of East New York, Long Island, is "Maguire's" Patent





by means of screws become loose, and consequently worthless, long before the brush is condensation of STEAM UPON COLD SURFACES, worn out. By this invention the manufacturers has important practical bearings in the manage



the handles cannot become loose in ordinary | surface, that it is practically impossible to measwear. They are made in ten different qualities, ure it; wherefore indirect methods of investi and are afforded at about the same cost as the common styles. Graham & Haines, No. 88 from his experiments are as follows: First, Chambers street, are sole agents for these that a small quantity of air in steam does very

Scientific and Technical Notes.

The process invented by Mr. Gibbs, for the UTILIZATION OF PYRITES RESIDUE, after the manufacture of sulphuric acid, is described by Mr. Chas. Mene, in an interesting

mmunication to La Howille, as follows: The pyrites treated, chiefly those of Spain, enerally contain copper worth extracting. The residue, which still contains, perhaps, 4 per cent. of sulphur, is mixed with fresh pyrites, so as to raise the contents of sulphur to about 5 per cent.; 7 per cent. of rock salt is then added, and the mass having been mixed, is roasted for 12 hours at scarcely a dull red heat. This is done in a reverberatory furnace, the sole of which is formed by a turn table. The sulphur under the influence of the oxygen changes the chloride of sodium into sulphate of sodium. In treating the mass by water, sulphate of soda and chloride of copper go into solution, and the insoluble residue consists almost entirely of oxide of iron, which is sold to the ironmasters, and turned to account by them. There remains to be extracted from the solution the soda and the copper, and these two processes are made by Mr. Gibbs to work into each other. Firstly, the copper is thrown down as sulphate by sulphuretted hydrogen, and the precipitate is converted into a coppery matte (Cu2S) in a reverberatory furnace; the matte is subsequently roasted, and then refined into a malleable and very pure copper. Beside the copper, Second.—The bulkiness of raw peat is so the pyrites usually contains a little silver. great that it requires very large drying space extract it, the first portion of the precipitate By this system the noisy clapper was done away whole of the copper, determined by analysis) is were not so liable to make mistakes with the

reducing flame of a reverberatory furnace; with system. 1/2 ton of sulphate the operation lasting three Prussia, a process for machine is very rapid, thus doing away with the hours. Shulphide of sodium is thus obtained, objection of great space and bulk, and the full cost is one-fourth that of the English machine.

Taking for calculation the same weight of wet peat as before, to wit, 450 tons, we have \$90 tons of water to expel first. Now, in the American machine, this is expelled at a geam the peature, and the steam is carried through the receiver, over the press, and back to a steam jacket, around fresh peat in the vat, where the seem is condensed, and its latent heat deposit. objection of great space and bulk, and the full and is dissolved out with warm water, in a

is about 1200 degrees at a slight pressure, 250 air passing through gives carbonic oxide, and sensible and 950 latent, and it is this 950 units of in the second this carbonic oxide, by suitable heat out of 1200 which is saved, or of the 45 admission of air, burns, and gives carbonic tons of fuel otherwise necessary, 33 tons are acid from the decomposition of the carbonate provided by using this economy, and only 11 of lime. The sulphuretted hydrogen disentons required for drying 90 tons. When it is gaged is entirely absorbed, for it will not pre-desired to carbonize the peat, the combustible cipitate quite all the copper, the last portions gases expelled in charring, chiefly carburetted having to be separated by the addition of a hydrogen, are carried over with the steam, little scrap from. The process is interesting, as purified somewhat by passage through the system of the steam of the phon tank, and led into the furnace, where their suitably applied they often become industrial,

Mr. Jas. G. Fair, Superintendent of the Hale pipes over the fire at the required temperature & Norcross, Gould & Curry and Virginia Consolidated Mines, has invented and applied a simple and economical method of

MINE VENTILATION

which is well spoken of. It consists of simply extending one end of the top cap of a set of timbers 18 inches beyond the usual length required, and making that amount of extra excavation. Then a partition of inch boards is earried up on the inside of the drift timbers, next to the excavation, leaving a clear open space on the outside of 18 inches in width, the full hight of the tunnel timbers. This division forms a complete draft, carrying the pure air Handled Shoe Brush, which we illustrate be- from the outside in, and the foul air from within low. The novelty consists in the attachment out, making the most complete ventilation posof the handle to the brush stock, which is sible. The draft of air thus created cools the effected by means of a groove sides and face of the drift, gives the workmen in the stock into which the pure, healthful breathing, and thus enables nandle slides, making a per- them to do double the amount of labor, in feetly fitting joint, as will be comparative comfort. This principle Mr. Fair seen in the engraving. The has put into practice in driving the north drift round brush for applying the on the 1900 foot level of the Hale & Norcross blacking is attached to the mine, which drift has been driven a distance of oper side of the handle in a similar manner. 249 feet from the main incline, with the most The brush complete is shown in the annexed perfect ease and comfort to the miners. He is now engaged in putting the same plan in use It is a common complaint that the handles of on the lower level of the Gould & Curry, and

expresses an undoubted faith in be ing able to run a drift in that manner to any required length whatever.

An investigation lately made by Prof. Reynolds, of the Engineering shoe bruses that are attached to the brush stock | Department of Owen's College, Manchester, on

ascertain if there is a great difference in the rates of condensation of pure steam, and a mixture of steam and air; and, again, to ascertain if the effeet of the mixed air on the condensation increases as the proportion of air to steam increases. The rate of condensation of pure steam is so great, when it impinges upon a cold

much retard its condensation upon a cold sur face; that, in fact, there is no limit to the rate at which pure steam will condense, except the power of the surface to carry off the heat. Second, that the rate of condensation diminishes rapidly, and nearly uniformly, as the air that is present increases in a proportion of from two to ten per cent. of the steam, and then less and less rapidly until 30 per cent. is reached, after which the rate of condensation remains nearly onstant. Third, that, in consequence of this effect of air, the necessary area of surface of a condenser for a steam engine increases very rapidly with the quantity of air allowed to be present within it. Fourth, that by mixing air with the steam before it is used, the condensation at the surface of the cylinder may be greatly diminished, and consequently the efficiency of the engine increased. Fifth, that the maximum effect, or near it, will be obtained when the pressure of the air is one-tenth that of the steam.

At a meeting of the North Staffordshire Institute of Mining and Mechanical Engineering, lately held at Stoke upon-Trent, Mr. T. M. Goddard read a paper on

ELECTRIC MINE SIGNALING.

in which he stated that it is ersential to the successful working of the system that the wires should be well insulated to prevent breakages. This system required less room than the old one in shafts; and the wires required no play, as did the old stranded bell wire. However much the wire was coiled, contact remained perfect, independent of distance, thus avoiding the necessity for laying wires in up-cast shafts,
To
where the effects on wire were so detrimental. (that containing the first 5 per cent. of the with, except in shaft repairs. Engine tenders whole of the copper, determined by analysis) is set aside. This precipitate contains all the silver which is extracted, and sold as chloride of silver.

Returning to the treatment of the sulphate of soda, which was mixed with the chloride of soda in the first solution, the object is, on the one hand, to transform it into carbonate of soda, which is saleable; and, on the other, to recover the sulphuretted hydrogen which has been used for the separation of the copper. The solution whence the copper has been precipitated is evaporated. The sulphate of soda is then mixed with coal, and subjected to the reducing flame of a reverberatory furnace; with

There has recently been introduced in Berlin,

CASTING NICKEL

ESTABLISHED IN 1849.

JOHN C. JEWETT & SONS, Buffalo, N. Y.



CAGES. BIRD

Water Coolers, Water Filters, Bathing Apparatus, Tea Trays, &c. Send for Illustrated Catalogue

Miller's Patent Combined Plow, Filletster & Matching Plane. 2500 ALREADY IN USE. Manufactured by the

Stanley Rule & Level Co, NEW BRITAIN, CONN.

35 Chambers Street, NEW YORK. Send for Descriptive Circular





Garden Implements,

Etc. Send for Catalogue and Price List.







Ludlow Valve Mfg. Co.,

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

VALVES

Double and Single Gate, ¾ in. to 36 in.—outside and inside Screws, Indicator, &c. Send for Circular.

BLAKE'S PATENT STONE & ORE BREAKER.

New Pattern with Important Improvements & Abundant Strength



For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS. It is extensively in use in MINING operations, for crushing

IRON, COPPER, ZINC, SILVER, GOLD, and other ORES. Also for crushing Quartz. Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese. Phosphate Rock. Plaster, Soapstone, &c. For Illustrated Circulars, and particulars, address,

BLAKE CRUSHER CO., New Haven, Conn.

Pure Bronzed Metal and Hand-Plated Knobs, Hinges, Ne.,

Depot of the

LOCK

THOMAS MORTON,

Many & Marshall,

Brass & Copper Chain, SASH CHAIN.

Office, No. 15

Murray St.,

And patented attachments for same, for suspending windows, from 100 to 1500 lbs. Sashes can be suspended with my Chain and attachments in a shorter time and with less trouble than by using the ordinary common cord. I am now offering the Chain and fastenings cheaper than any other in the market. Also manufacturer of the MORTON & BREMNER'S Straight and Circular Spring Balances. Established in 1842. dinary common eaper than any BREMNER'S from 100

48 Warren St., N. Y.

BUILDERS' hain H and Pulley BEST 80 for Heavy HARDWARE,

CHEAPEST Sash MADE



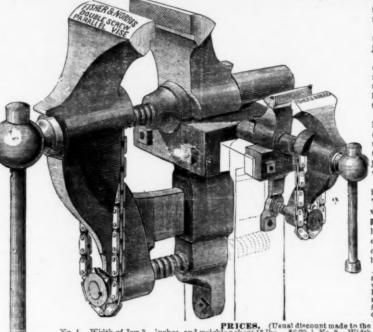
HOWARD PARALLEL BENCH VISE. end for price list. U

RUSSELL & ERWIN MFG. CO., New York and Philadelphia, Agents. NOTICE.

These Vises are only manufactured at the HOWARD IRON WORKS, at Buffalo, N. Y. and are so stamped. The improvements in these Vises which are patented are valuable, and parties who claim to manufacture, and are offering a Vise representing it to be the same as the HOWARD VISE, are deceiving the Trade.

HOWARD IRON WORKS.

DOUBLE SCREW



ists, Tool Makers, Locomotive Shops, &c., has established its superiority over every other.

It is the only one which has all the strength and "grip" of

the ordinary English Vise; and at the same time with the jaws parallel at every point of opening.

In all other "Parallel" Vises using only one screw, less

than one-third of the power applied is effective on the work itself; beside, in those vises the large waste of power on the slide from friction and the tendency to "jam," of the lower end of the jaw, if screwed up very hard, renders

them unfit for heavy work.

In this vise the jaws are kept always parallel by the lower screw moving in or out exactly with the upper, lever screw, by means of the chain connecting both: also, by their relative position two-thirds of the power applied at the lever screw is received by any piece held between the aws—thus enabling the heaviest work ever required of a rise to be done with this.

The Screws are forged of the best refined iron, and work in solid cut thread boxes. The Jaws are faced with best Tool Steel, welded on, file cut, and properly tempered for

The Chain is very carefully made of case hardened inside links and rivets, and, acting only to regulate the position of the lower screw for different points of opening, has no direct strain of the work upon it; it is therefore as dura ble as the other parts.

Only the strongest material is used in this manufacture and from actual experiment on the six inch jaw vise which has screws of 13; inch diameter and lever 19 inches long, it has been found that applied at the lever Screw, he required to break either of the jaws, eleves and one-half tons, thus exhibiting a maximum strength far above any other vise of like size.

No. 1. Width of Jaw 3 inches, and weighing about 12 lbs., \$600 | No. 3. Width of Jaw 5 inches, and weighing about 80 lbs., \$600 | No. 3. Width of Jaw 6 inches, and weighing about 12 lbs., \$600 | No. 4. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 7 inches, and weighing about 160 lbs., \$400 | No. 5. Width of Jaw 7 inches, and weighing about 160 lbs., \$400 | No. 5. Width of Jaw 7 inches, and weighing about 160 lbs., \$400 | No. 5. Width of Jaw 7 inches, and weighing about 160 lbs., \$400 | No. 5. Width of Jaw 7 inches, and weighing about 160 lbs., \$400 | No. 5. Width of Jaw 7 inches, and weighing about 160 lbs., \$400 | No. 5. Width of Jaw 7 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 8 lbs., \$400 | No. 5. Width of Jaw 8 lbs., \$400 | No. 5. Width of Jaw 8 lbs., \$400 | No. 5. Width of Jaw 8 lbs., \$400 | No. 5. Width of Jaw 8 lbs., \$400 | No. 5. Width of Jaw 8 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 8 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6 inches, and weighing about 125 lbs., \$400 | No. 5. Width of Jaw 6

FISHER & NORRIS, Trenton, N. J.,

MALTBY, CURTISS & CO., Waterbury, Conn.,

CAPEWELL'S CIANT NAIL PULLER.



Reasons why you should Use the Nail Puller.

1st. The edges of the boxes are never split or injured. 2d. No broken Nails in the oox or cover. 3d. The box and cover remain sound for future use. 4th. Nails are drawn without breaking or bending. 5th. The box can be opened in half the time required by the old method with chisel or crane. bend for prices, and other information, to our Salesroom,

No. 62 Reade St., N. Y



Pronounced by those who have used them the handlest and most desirable tool in use of its kind. BELT PUNCH, KNIFE AND AWL,

E. C. C. KELLOGG & CO., Hartford, Conn.

For Sale Wholesale and Retail by ÆTNA NUT COMPANY, 97 Chambers Street, New York.

PROVIDENCE TOOL CO.,



WM. H. HASKELL & CO.,

Pawtucket, R. I.,

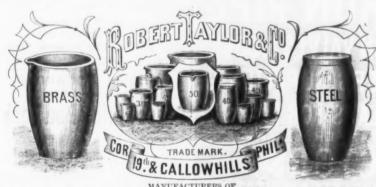
Manufacturers of

Coach Screws (with Cimlet Point),

Machine and Plow Bolts, FORGED SET SCREWS AND TAP BOLTS.

Warerooms, No. 11 Warren St., New York, H. B. NEWHALL, Agent-

Address your Orders to H. B. NEWHALL, Agent, No. II Warren Street, N. Y.



BLACK LEAD CRUCIBLES

Steel, Brass, Gold, Nickel and all kinds of Metals.

Mr. Robert Taylor, who was for seven years the head of the late firm of Taylor, Strow & Co., and who is a practical mechanic, and familiar with all the details of the manufacture of Crucibles, attends personally to our manufacturing department. We would, therefore, respectfully solicit a continuance of the

ROBERT TAYLOR & CO., No. 1900, 1902, 1904 & 1906 Callowhill, St., Philadelphia. General Agents. MERCHANT & CO., 507 Market Street, Philadelphia. PARK & CO., 122 Second Avenue, Pittsburgh, Pa.

STROW, WILE & CO.

Phila. Black Lead Crucible Works,

Nos. 1330, 1332 & 1334 Callowhill St., Philadelphia.

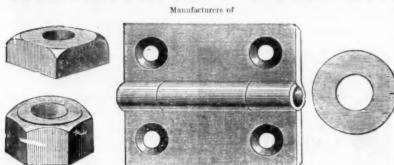
SUPERIOR BLACK LEAD CRUCIBLES

For Melting Steel, Brass and other Metals. And Crucibles for Hardening Files.

Also any size or shape made for Chemical, Assaying and Refining Purposes. Mr. R. Taylor is no longer connected with us in the Black Lead Crn STROW, WILE & CO.

GENERAL AGENTS: Messrs. HALL & CARPENTER, 709 Market St., Phila.

THE ÆTNA NUT COMPANY



Machine Forged & Hot Pressed Nuts,

Washers, Bolts, Wrought Narrow Butts, Table and Trunk Hinges,

Fellow Plates, Axle Clips, Wrought Clip Yokes, Rivets and Burs,

We desire to call your attention to our MACHINE FORGED NUTS. They are made from extra quality of Iron, combining lightness and strength, and are especially well adapted for Agricultural Mashines and Carriage Work.

Our WASHERS are made on improved machines-making them perfectly flat, smooth and true a ad are warranted superior to any in market.

WAREROOMS: No. 97 Chambers & 79 Reade Sts., N. Y. C. L. CAMPBELL, Agent

PENNSYLVANIA

CRUCIBLE WORKS. ROSS & HOFERKAMP.

1438, 1440, 1442 & 1444 North Sixth Street, Nos. 1439, 1441, 1443, & 1445 Marshall Street.
OFFICE ON SIXTH STREET,

PHILADELPHIA, PA.,

BLACK LEAD CRUCIBLES.

LINFORTH, KELLOCG & CO., Jos. Scheider & Co.

Wholesale Hardware House

Manufacturers' Agents,

Nos. 3 & 5 FRONT STREET, SAN FRANCISCO., CAL.

Sole Agents for the Pacific Coast, for the following leading Goods.

The Powell Tool Co.'s Axes, Edge Tools, Picks, Mattocks, &c. The Sandusky Tool Co.'s Planes, Plane Irons, Carpenters', Cabinet Makers' and Coopers' Tools.

The Black Diamond Files, G. & H. Barnett, Manufacturers, Philadelphia. Rumsey & Co.'s Pumps, Hydraulic Rams, Steel Amalgam Bells, Fire Engines, &c

The Woolworth Handle Works, Axe, Pick, Sledge and other Handles.

ALSO AGENTS FOR

The Enterprise Mfg. Co.'s Coffee and Spice Mills, Molasses Gates, Bung Borers, &c.

The U. S. Screw Co.'s Gimlet Pointed Screws.

The Union Steel Screw Co.'s Gimlet Pointed Steel Screws.

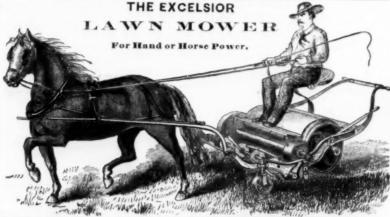
New York Office, 96 Chambers St., W. B. FOX, Manager.



Price of Monitor, (No. 0, 10 in. cut) \$15; No. 1, (11 in. cut) \$20. wanted in every Town.

BARLOW & WALKER, Sing Sing, N. Y.

Agents in Cincinnati, HOWELL GANO & CO. Agents in Boston, BUBIER & CO., 23 Exchange Street.



Manufactured by (Send for Circular.) Chadborn & Coldwell Mfg. Co., 58 Beekman St., N. Y NEWBURCH, N. Y.



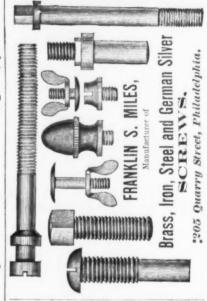
J. H. STERNBERCH,

Machine Bolts, Bolt Ends, RODS for Bridges & Buildings, HOT PRESSED NUTS,

H. B. NEWHALL, Agent for New England New Jersey and Eastern New York, 11 War-

J. AUSTIN & CO., 168 Fulton Street, N. Y.

SOLE AGENTS FOR



Japanned & Stamped



MINER'S PATENT



PATENT SELF-RIGHTING

PATENT SELF-RIGHTING CUSPADORE



CAST-IRON.

FACTORY, PORTLAND, CONN.

Dipe, Fittings, &c.

MORRIS, TASKER & CO.,

PASCAL IRON WORKS, Philadelphia,

TASKER IRON WORKS, New Castle, Del.,



Office, Fifth and Tasker Streets, Philadelphia. Office and Warehouse, No. 15 Gold Street, New York. Office, No. 29, Pemberton Square, Boston. Office and Warehouse, Titusville, Pennsylvania. MANUFACTURERS OF

WROUGHT IRON WELDED TUBES,

Piain, Galvanized and Rubber-Coated, for Gas, Steam and Water.

Lap-Welded Charcoal Iron Boiler Tubes. Oil Well Tubing and Casing, Gas and Steam Fittings, Brass and Steam Fitters' ools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved oal-Gas Apparatus, Etc.

The Billings Patent Solid

SEWING MACHINE SHUTTLE.

The Barwick Pipe Wrench.



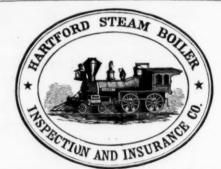
DROP FORGINGS

For Machine Handles, Lathe Wrenches, Milling Machine Cranks, Thumb Screws, and parts of Guns, Pistols, Sewing Machines and Machinery Generally. W also manufacture, to order.

Cap. Set. Machine & Gun Screws, of Iron, Steel or Brass. . Price List and "Cuts of Goods manufactured by us sent to any order on

BILLINGS & SPENCER CO.,

Lawrence Street, Hartford, Conn.



CAPITAL \$500,000. ssues Policies of Insurance, after a careful Inspection of the Boilers

Boilers, Buildings and Machinery,

STEAM BOILER EXPLOSIONS

The Business of the Company includes all kinds of STEAM BOILERS concerning the plan of the Company's operations can be obtaine COMPANY'S OFFICE. HARTFORD, CONN., or at any Agency.

J. M. ALLEN Pres. W. B. FRANKLIN, Vice-Pres. J. B. PIERCE, Sec'y.

J. M. ALLEN, President.
LUCIUS J. HENDEE, Presit Ætna Fire Ins. Co.
PRANK W. C.H. E.Y. Ass't Treas. Chency Brothers
Sik Manufacturing Co.
DANIEL PHILLIPs. of Adams Express Co.
GEO. M. BARTHOLOMEW. Presit Amer. Nat'l Bank.
WILLIAM ADAMSON, of Baeder, Adamson & C.
PRIMARY WILLIAM ADAMSON, of Baeder, Adamson & C.
Philadelphia.
WILLIAM ADAMSON, of Baeder, Adamson & C.
Philadelphia.
W. B. BEENT, of Win. B. Bement & Co., Philadelphia.
W. B. BEENT, of Win. B. Bement & Co., Philadelphia.
W. B. BEELAND, Treas. Dwight Manufacturing to Boston. GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fl
Arms Mfg. Co.
ATSTIN DUNHAM, Pres't Williamtic Linen Co.
GEO. CROMPTON, Crompton Loom Works, Worcester,
EARL P. MASON, Pres't Prov. & Work, R., Prov.
WILLIAM ADAMSON, of Baeder, Adamson & Co.,
Philadelphia.

N. w York Branch, No. 1 Fark Place.



Stearns' Patent Saw Vise No. 1.

le and effective device for holding saw ation of filing is too well known to re-ban a passing description here. Its well larity during the long period that it has be market, establishes its superfortly set vises. It is the only saw vise in the is so constructed as to spring or strair venting vibration and effecting a great s. The vise can be readily watached to a

GEO. N. STEARNS &'CO., Hubbard & Curtiss Mfg. Co., New York Agents.

Pipe, Fittings, &c.

McNab & Harlin Mfg. Co.,

BRASS COCKS

For STEAM,

and GAS

Wrought Iron Pipe & Fittings, Plain and Galvanized PLUMBERS' MATERIALS.

Illustrated Catalogue sent by express to the Trade on application.

Factory, Paterson, N. J.

56 John Street, N. Y.

GS, BRASS & IRON VALVES & COCKS Billings & Spencer Co., TOOLS& STEAM FITTERS SUPPLIES &c.

TED TO PLANS FOR MILLS &c Brass Spring Pad Locks

FOR HIGH & LOW, PRESSURE STEAM HEATING APPARATUS FOR ALL CLASSES OF BUILDINGS.

Send for Illustrated Catalogue.

BOSTON, MASS. and McKEESPORT, PA., MANUFACTURERS OF

Best Quality Lap Welded Iron Boiler Tubes, STEAM AND GAS PIPE,

Artesian Oil and Salt Well Tubing and Casing, With Patent Protecting Coupling;

Mack's Patent Injector for Feeding Boilers. JAMES C. CONVERSE, President, McKeesport. WM. S. EATON, Treasurer, Boston

New York Office and Warehouse 78 William cor. Liberty Street.

439 East 10th St., New York,

Jenkins' Patent

Compression

Valves

Gauge Cocks

Nelson's Patent

LUBRICATOR.

Warranted the most

reliable and durable in the country.

EATON & COLE. Nelson, Finkel & Co., Manufacturers of Wrought Iron Pipe Fittings,

COCKS, TOOLS, &C., NEW YORK. 58 John Street,

Sole Agency for the Pacific Coast for Regester's Patent Gauge Cocks, CONROY, O'CONNOR & CO.,

CAST IRON PIPES FOR WATER AND GAS.

Branches Retorts, &c. Warren Foundry & Machine Co.,

PHILLIPSBURG NEW JERSEY.

WHEATCROFT'S SELF-ADJUSTING PIPE WRENCH.



Forged from Best Tool Steel. The dog is solid over the head of the lever bar, taking the strain off from the pin.

Each Wrench takes four Sizes of Pipe. J. AUSTIN & CO., 168 Fulton St., N Y.

THE CHARLES GREGG MANUFACTURING CO. BRASS WORK of all kinds,

FITTINGS FOR

Steam, Gas and Water PLAIN AND GALVANIZED

WROUGHT IRON PIPE,

Nos. 62 & 64 Gold Street, NEW YORK.

Established, 1836. Incorporated, 1872 Send for Price List.

GRAFF TUBE WORKS.

WILLIAM GRAFF & CO., Manufacturers of Plain and Galvanized

Wrought Iron Pipe

Gas, Steam, Water, Oil, &c., No. 140 First Ave., PITTSBURGH, PA. Pipe of any Size, Length or Thickness furnished to

WM.S. CARR & CO. Sole Manufacturers of

Carr's Patent Plumbers' Goods

Pumps, Water Closets, Fountains, Vases, &c.

OFFICE AND WAREROOMS 106, 108 & 110 Centre Street,

Factory, Mott Hazon, New York. Wilson Bohannan,

Manufacturer of Patent



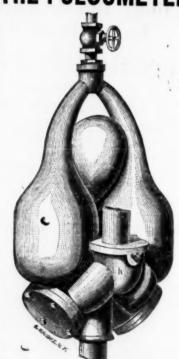
Railroad Switches. Freight Cars, &c. Cor. Broadway & Kossuth St. Brooklyn, E. D., N. Y.

F C. HUCHTHAUSEN.



Manufacturers of Patent Brass Pad Locks for Ratiroads and Switches. Also, Patent Sta-tionary R. R. Car Deer Locks. Patent Pian Lad Sewing Machine Locks. 14t to 145 kaliroad Avenue, NEWARK N. J. Unstrated Catalogues sent on application.

THE PULSOMETER



The simplest, most durable and effective Steam Pump now in use. Will pump gritty or muddy water, without wear or injury to its parts. It cannot get out of order. BRANCH DEPOTS.

11 Pemberton Square, Boston.
1327 Market St., Philadelphia.
59 Wells St., Chicago.
Southwestern Exposition, New Orleans.
S11 & S13 North Second St., St. Louis. Mo.

C. HENRY HALL & CO., 20 Cortlandt St., New York City.

TURNED



One-sixteenth to five-eighths diameter. Heads and points to sample. IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co., For. let and North adstreets, Williamsburgh, N. V.

The Iron Age Directory

and Index to Advertisements.

Agricultural Steels and Irous, etc., Makers of. Alarm Tills. Miles Alarm Till Co., Providence, R. I.
Tucker's Alarm Till Mfg. Co., Indianapolis, Ind.
Anvils., Manufacturers of.
Fisher & Norris, Trenton, N. J. Artists' Materials. Keuffel & Essar, 116 Fulton, N. Y. Augers. Eimira Nobles Mfg. Co., Elmira. N. Y. Augers, Bits, etc., Manufacturers of.
Shattuck W. F. & Co., 13 Chambers, N. Y.,
Stearns G. N., Syracuse, N. Y.
Axies, Springs, etc., Manufacturers of.
Clark, Smith & Co., Fort Plain, N. Y.,
Hotchkies Guy C. & Field, Brooklyn, E. D.,
Palmert Co., Concept N. M. J. Palmer & Co., Concord, N. H .. Wentworth H. M. & Co., Gardiner, Mc porters of. Gueutal George & Son, 39 W. 4th, N. Y. Gueutal George & Son, 39 W. 4th, N. Y. Bellows. Manufacturers of.
Churchyard, Joseph. Buffalo, N. Y.
Newcomb Bro's, 586 Water, N. Y. Belting. Leather, Makers of, Alexander Bros. 412 N. 3a. Phin. Bradford & Sharp Cincinnati, O. Page Belting Co. 24 Exchange St., Bosto Beil Punches, Manufacturers, Con., Rellogg E. C. C. & Co. Hartford, Conn. Bird Cages, Makers of, Lindeman O. & Co., 254 Pearl, N. Y. Maxneimer John, 249 Pearl, N. Y. Bit Braces, Manufacturers or, Miller's Falls Mfg. Co., 78 Beekman, N. Y. Beilers, Steam. Tanner Wm. E. & Co., Richmond, Va... Bolt Heading Machines. Manufacturers of Chapta Machine Co., New Hartford, Conn... Plumb, Burdict & Barnard, Buffato, N. Y..... Borax. Boach & Co., Hartford, Ct... Beasen & Co., Hartford, Ct.

Brass. Manufacturers of.

Ansonia Brass and Copper Co., 19 Cliff. N. Y.

Ansonia Brass and Copper Co., Waterbury, Conn.

Brooklyn Brass & Copper Co., 199 John, N. Y.

Davol John & Sons, 199 John, N. Y.

Miller Edward & Co., 4 Warren, N. Y.

Plume & Atwood Mfg. Co., 4 Ochambers, N. Y.

Waterbury Brass Co., 52 Beekman, N. Y.

Waterbury Brass Co., 52 Beekman, N. Y. Brass Castings. Holland T. & Co., 8 Gold, N. Y.... Bridge Builders.
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y....

Butcher and Shee Kuives, Manufacturers of.
Wilson John, Sheffield, England. Wilson John, Siedmeid, England.

Butts and Hinges. Makers of.

American Butt Co., Providence. R. I.

American Spiral Crooke & Co., 168 Mulberry, N. Y.

Rov & Co., West Trov. N. Y.

Stanley Works. 88 Beekman, N. Y.

Union Mfg. Co., 99 Chambers, N. Y.

7 Cabinet Hardware, Manufacturers of. Landers, Frary & Clark, 298 Broadway, N. Y Carriage Bolts, Makers of, Townsend, Wilson & Hubbard, Phila. Carriage Hardware, Makers of. Smith H. D. & Co., Plantsville, Ct,... Car Wheels, etc., Manufacturers of, Jackson & Woodin Mfg. Co., Berwick, Pa. Taylor fron Works, High Bridge, N. J.... Cain, Gordon & Co, 1845 Richmond, Phila. Kendrick & Runkle, Trenton, N. J. Wyatt Thos., 771 Eddy, Providence, R. I. Chisels, Manufacturers of. Buck Bros., Millbury, Mass., Clothes Wringers. Manufacturers of Providence Tool Co., 11 Warren, N. Y. Coal. Miners of . Pardee A. & Co., 111 Broadway, N. Y... Conl Hods, Manufacturers of. Easterbrook Wm., 811 Cherry, Phila. Ohio Coal Hod Co., 487 E. Front, Cincinnati. O... Smitn. Burns & Co., 48 Ctiff, N. Y. Coffee and Spice Mills.

Lane Brothers, Millbrook, N. Y.
Enterprise Mig. Co., Philadelphia, Pa..

Coffin Trimmings, Makers of.

Wayne Hardware Co., Cincinnati, O... Commission Merchants. English. Goddard Samuel A. & Co., Birmingham, Eng.. Compasses and Dividers. Manufacturers of. Bemis & Call Hardw. & Tool Co., Springfield, Mass. 2 Cooper's Tools, etc., Dealers in. Little Chas. E., 59 Fulton N. Y. Swan & Brombacher, 33 & 34 Fulton, N. Y. Corrugated Stove Pipe Elbows, Makers of Corrugated Metal Co., East Berlin, Conn...... Crucibles, Manufacturers of.
Newkumet Adam, 1867 N. Front, Phila.
Ross & Hoferkam, 1888 N. 6th, Phila.
Strow, Wile & Co., 199 Market, Phila.
Taylor Robert & Co., 190 to 196 Callowniii, Phila. Curry Combs, Manufacturers of. Kellogg W. P. & Co., Troy, N. Y.... Kellogg W. P. & Co., Troy, N. Y.

Reiker, Importers of, for Danne, N. Y.

Borker Hermann & Co., for Danne, N. Y.

Carlyle Wm. A., 50 Cortlandt, N. Y.

Dicktuson Henry, 66 and 68 Reade, N. Y.

Fisher Jos. S., 411 Commerce, Phila.

Friedman & Lauterfung, 14 Warren, N. Y.

King H. & J. W., 80 Chambers, N. Y.

Peace Chas. Jr., 62 Chambers, N. Y.

Peters Bros. 58 Chambers, N. Y.

Tilmes A. & J. W. Borneros, Phila.

Wisson Hawksworth, Ellison & Co., 80 John, N. Y.

Taylor TLomas 43 Chambers N.

Valor Manufacturers of. Taylor Lomas 35 Chambers N. Y.

'altery, Manufacturers of.
American Knife Co., Thomaston, Conn.
Burkinshaw Aaron, Pepperell, Mass...
Landes, Frary & Clark, 298 Broadway, N. Y.
Mille Trans. Cutlery Co., W. Meriden, Conn.
Y. York Knife Co., Walden, N. Y.
S. Steel Shear Co. W. Meriden, Coan.
Woods Cutlery Co., Antrim, N. H. Differential Pulley Blocks, Makers of Van Wart & McCoy, 43 Chambers, N. Y. The Challenge Door Spring Co., 49 Ann. N. Y., Van Wagner & Williams, 27 Park Row. Dredging, and Makers of Dredging Machines. Am. Dredging Co., 214 S. Delaware ave., Phila. Drill Chucks, Manufacturers of, Hull F. A. & Co., Danbury, Conn.... Lambertville Iron Works, Lambertville, N. J Drilling Machines. Makers of.
Gill George W., 27 North 5th, Philadelphia.
Miller Falls Co., 78 Beekman, N. Y.
Thorne & DeHaven, Philadelphia. Edge Tools, Makers of. Bradley G. W., 37 Chambers, N. Y., Elevators. Makers of. Howard Geo. C., 17 S. 18th, Phila.... Ous Bros. & Co., 34s Broadway, N. Y. Emery. The Union Stone Co., 16 Exchange, Bosto Emery Cloth. The Union Stone Co., 16 Exchange, Boston Emery Wheels, Makers of.
Tanite Company, Strondsburg, Pa.
The Union Stone Co., 16 Exchange Engineers, Machinists, etc.
Henshall James, 1056 Beach, Phila.
James Moore, cor. 19th and Buttonwood, Phila Engines, Stram. Makers of, New York Steam Engine Cc. 98 Chambers, N. Y. Shapley & Wells, Binghamton, N. Y. Tanner Wm. E. & Co., Richmond, Va. Woodruff Iron Works, Hartford, Conn. Engravers, Wood. Patterson Jas. S., 21 Spruce, N. Y.... Eyelets. Union Eyelet Co., Providence, R. I...... Faucets, Self-Measuring, Makers of. Enterprise Mfg. Co., of Pa., Phila, and N. Y... Enterorise Mfg. Co., of Fa., Phila. and N. Y.

Files. Importers of:

Hiles. Importers of:

Higher Joseph S., 411 Commerce, Phila.

Franse Peter A. & Co., 26 Fulton, N. Y.

Moss F. W., 80 John, N. Y.

Moss F. W., 80 John, N. Y.

Sanderson Bros. & Co., 16 Cliff, N. Y.

Spear & Jackson, 86 Chambers. N. Y.

Files. Manufacturers of:

Auburn File Works, Auburn, N. Y.

Barnett G. & H., 61 and 48 Richmond, Phila.

McCaffrey & Bro., 1722 and 1734 N. 4th, Phila.

Micholson File Co., Frovidence, R. I.

Wheeler, Clemson & Co., Middletowg, N. Y.

Fire Brick. Makers of.
 Fire Brick, Makers or.
 Brooklyn City Retort and Fire Brick Works, Van Dyke, St., Brooklyn, N. Y.
 2

 Dyke, St., Brooklyn, N. Y.
 2

 Rall A. & Sons. Perth Amboy, N. J.
 2

 Kreischer B. & Son, 58 Goerck, N. Y.
 2

 Newkumet Philip, 23d and Vine, Phila
 2

 Palmer, Newton & Co., Albany, N. Y.
 2

 Salamander Works of Woodbridge, N. J., foot of Bethune St., N. Y.
 2

 Watson John R. Ferth Amboy, N. J.
 2

 Flutting, Machines.
 2
 Fluting Machines.

Meyers Mfg. Co., 200 Centre, N. Y.
Turner W. D. & Co., Geneva, Ills. Fluor Spar-Flint and Emery Paper and Cloth. Galvanized Iron. Lefferts Marshall Jr., 90 Beekman, N. Y. Whitnum S., Greenpoint, L. I. Giant Nail Extractor. Maltby, Curtiss & Co., Waterbury, Ct... Glass. Importers or. Downing A. C. & Co., 57 Beckman, N. Y Governors. Shive Governor Co., Bethlehem, Pa Sanve Governor Co., Bethlehem. Pa.

Grindstones.
McDermott J. & Co., Cleveland. O.,
Mitchell J. E., Philadelphia, Pa.
Shepard Sidney & Co., Buffaio, N. Y.,
Wood Walter R., 283 and 285 Front, N. Y.

Guppowder. Makers of.
Kneeland F. L. (Dupont 10 Wall, N. Y.,
Lafin & Rand Powder Co., 21 Park Row, N. Y. Hammers, etc., Manufacturers of. Emmet Hammer Co., Brooklyn. E. D., N. Y. Hammond C. & Son, 13 N. 5tb. Phila. Nelson Tool Works, 157 E. 32d, N. Y. Hardware, Brass and Galvanteed.
Tiebout W. & J., 230 Pearl, N. Y.
Hardware, Commission Merchants.
Fernald & Sise, 100 Chambers, N. Y.
Green R. M., 100 Chambers, N. Y.
Graham & Haines, 85 Chambers, N. Y.
Keith & Kelso, 23 & 25 S. Charles, Baltimore
Walbringe Geo. B., 99 Chambers, N. Y. Walbringe Geo. B., 29 Chambers, N. 1.

Hardware Bealers.

Linforth, Kellogg & Co., San Francisco, Cal.

Lloyd. Shappiec & Witton, 825 Market, Phila.

Quackenbush, Townsend & C., 56 Keade, N. Y.

Shepara Sidney & Co., Buffalo, N. Y.

Turner, Seymour & Judds. 64 Dunne, N. Y. Turner, Seymour & Judds. 64 Duane, N. Hardware Importers.
Deam & Murray, 54 Cliff, N. Y.
Boker Hermann & Co., 101 Duane, N. Y.
Field Alfred & Co., 47 John, N. Y.
Hilger & Sons, 57 Chambers, N. Y.
King H. & J. W. 50 Chambers, N. Y.
Yan Warf & McCoy, & Chambers, N. Y.
Turnor R. A., 37 Chambers, N. Y. Hardware Manufacturers. Biddle Mfg. Co., 78 Chambers, N. Y. ardware Manufacturers, idddle Mg. Co., 26 Ammbers, N. Y. Zaterprise Mg. Co., Phila. Jart, Bliven & Mead Mg. Co., 263 Pearl, N. Y. Jacobus & Mimick Mg. Co., 96 Chambers, N. Y. Zaterprise Mg. Co., 96 Chambers, N. Y. Zellogg Win. P. & Co., Troy, N. Y. Jane, Gale & Co., Troy, N. Y. Wany & Marshall, 48 Warren, N. Y. Middletown Tool Co., 82 Chambers, N. Y. Middletown Tool Co., 82 Chambers, N. Y. Y. Zaterprise Mg. Co., 67 Beckman, N. Y. Protidence Tool Co., 11 Warren, N. Y. Zaterprise Mg. Co., 57 Reade, N. Y. Y. Stattuck W. F. & Co., 113 Chambers, N. Y. Stanley Works, 58 Beckman, N. Y. The Wethersfield Novelty Co., Wethersfield, Ct. Turner, Seymour & Judős, 64 Duane, N. Y. Thion Mg. Co., 90 Chambers, N. Y. Williams, White & Churchill, 73 Warren, N. Y. Williams, White & Churchill, 73 Warren, N. Y. Ardware Specialities. Wilson Mig. Co., 5t Chambers, N. Y.

Hardware Specialities.
Byington & Northup, Rochelle, Ilis.
Haase John A., rear 116 Vanhorn, Phila.
Markt & Co., 150 Centre, N. Y.
Pugsley & Chapping, 6 Gold, N. Y.
Shepard Sidney & Co., Burlino, N. Y.
Wiley & Russell, Greenfield, Mass Helve Hammers, Makers of. Bradley Mfg. Co., Syracuse, N. Y.. Hoes. Peters Bros. Manufacturing Co., Marshall, Mich... Hotsting Engines, Makers of.
Otts Bros. & Co., 348 Broadway, N. Y.
Todd & Rafferty Machine Co. 10 Barclay, N. Y. Horse Hay Forks and Fixtures, Makers of. Nellis A. J. & Co., Pittsburgh, Pa. Neins A. J. & Co., Prittsourgh, Pa.

Horse Nalls, Makers of.

Ausable Horse Nail Co., 28 Chambers, N. Y.,

Brundage & Co., Middletown, N. Y.,

Globe Nail Co., Boston, Mass.

Pratt & Co., Buffalo, N. Y.,

Putnam S. S. & Co., Nepouset, Mass. Horse Shoes, Makers of. Burden Iron Works, Troy, N. Y. Hydraulic Jacks.
Dudgeon Richard, 24 Columbia, N. Y. Ice Cream Freezers.
Blatchley Chas. G., Philadelphia.
Packer Chas. W., Philadelphia. Insurance, Boiler. Hartford Steam Boiler and Inspection Co Insurance, Fire.
Amazon Insurance Co., Cincinnati, O. Anazon Insurance Co., Cincinnau, C.,

Iron Brokers.
Boynton Geo. A., 70 Wall, N. Y.
Crane U. O., 101 John, N. Y.
Hazard & Jones, 212 Fearl, N. Y.
W. H. Petit & Pike 72 Wall, N. Y.

Iron, Corrugated. Manufacturers of.
Corrugated Metal Co., East Berlin, Conn.
Mosely Iron Bridge and Roof Co., 5 Dey.) Iron. Charcoal, Warm or Cold Blast, Quincy John W., 36 William, N. Y. Iron Commission Merchants. Althouse & Umberger, 34! Walnut, Philadelphia. Blakiston & Cox, 33 Walnut, Phila, Hand Jas. C. & Co., 614 and 616 Market, Phila. Hoopes W. Graham, 419 Walnut, Phila. Malin Bros., 228 Dock, Phila. Iron. Pig. Importers of. Williamson James & Co., 69 Wall, N. Y. Fren. Pig. Juporters of.
Williamson James & Co., 69 Wall, N. Y.

Irau Braters and Co., 69 Wall, N. Y.

Abeel Brothers, 190 South, N. Y.

Borden & Lovell, 70 and 71 Weax, Y.

Cleveland, Brown & Co., Cleveland, O.

Coddington T. B. & Co., 25 Cliff, N. Y.

Conklin & Huerstel, 99 Market Silp, N. Y.

Fuller, Lord & Co., 128 Greenwich, N. Y.

Fuller, Dana & Fitz, 110 North, Boston,

Garduer Win., 575 Grand, N. Y.

Harrison & Gilloon, 558 to 562 Water, N. Y.

Hart G. A., 208 Walnut, Phila.

Holden, Hopkins & Stokes, 101 John, N. Y.

Juckson & Chase, 268 and 208 Franklin, N. Y.

Juckson & Chase, 268 and 280 Franklin, N. Y.

Matthews Chas, W., 138 Walnut, Phila.

Peter and Mann, 228 and 230 Water, N. Y.

Peter and Mann, 228 and 230 Water, N. Y.

Petersons & Co., 24 Broadway, N. Y.

Piersons & Co., 24 Broadway, N. Y.

Pietnard, John W., 68 William, N. Y.

Richards D. W. & Co., 28 Mangin St., N. Y.

Suith Gam'l G. & C., 32 Wangin St., N. Y.

Suith Gam'l G. & C., 32 Wangin St., N. Y.

Suith Gam'l G. & C., 32 Wangin St., N. Y.

Suith Gam'l G. & C., 32 Wangin St., N. Y. Richards D. W. & Co., 92 Mangin St., N. Y. Smith Gau'l G. & Co., 542 Pearl, N. Y. Warner A. B. & Sons, 28 and 29 West, N. Y. Williamson James & Co., 69 Wall, N. Y. Whitney Alfred E., 58 Hudson, N. Y. Whitney Alfred R. 58 Hudson N. Y.

Iron, Manufacturers of
Britannia Iron Works, Middlesbro', Eng.,
Burden Iron Works, Middlesbro', Eng.,
Cleveland Rolling Mil Co., Cleveland, O.,
Cleveland Rolling Mil Co., Cleveland, O.,
Cleveland, G. C. Cleveland, O.,
Cleveland, C. C. Cleveland, O.,
Cleveland, C. C. Cleveland, O.,
Cleveland, C. C. Cleveland, O.,
Everson, Graff & Macrum, Pittaburgh, Ps.,
Fulton S. & Co., 242 S. Third, Phils.
Leonard John, 546 & 541 West St., N. Y.
Mitwalkee Iron Co., Mil Wankee, Wis.,
New Haven Relling Mill Co., New Haven, Ct.,
Old Dominion Iron & Nail Works Co., Richmo,
Oxford Iron Co., 58 Washington, N. Y.
Phoenix Iron Co., 440 Walnut, Phils.
Rowinnd Win. & Harvey, Phila.
Steering Iron and Railway Co., 42 Pine, N. Y.
Leonard Swedish. Importers of. Sterling Iron and Importers of Jessop Wm. & Sons, 91 and 93 John, N. Y. Mitander Nils, 69 William, N. Y. Lace Leather, Manufacturers of. Stoyle Wm. H. 403 Library, Phila... Lauterns. Manufacturers of.
Dietz R. E., (Tubular) 54 and 56 Fulton, N. Y.
Howard & Morse, 45 Fulton, N. Y.
Shepard Sidney & Co., Buffalo, N. Y. Barlow & Walker, Sing Sing, N. Y.
Chadborn & Coldwen Mfg Co., Newburgh, N. Y.... Lend and Tin Lined Lead Pipe, etc., Mira. Colwell Lead Co., 213 Centre, N. Y. Locks, Manufacturers of. Bohannan Wilson, Broadway and Kossuth, Brooklyp. Johannan Wilson, Broadway and Rossur E. D. Stanford Lock Works, Branford, Conn. Corwich Lock Co., Nowich, Conn. Jomer & Co., Newark, N. J. Frenton Lock Co., 48 Warren, N. Y. Yale Lock Mfg. Co., 298 Broadway, N. Y. Yale Lock Mig. Co., 286 Broadway, N. Y.

Machinerry, Makers of.
Bement Wm. B. & Sou, Philadelphia.
Billings & Spencer Co., Hartford, Conn.,
Chapin Machine Co., New Hartford, Conn.,
Goodspeed & Wrinan, Winchendon, Mass.
Place George & Co., 121 Chambers, N. Y.
Pratt & Whitney Co., Hartford, Conn.,
Selliers Win. & Co., 1600 Hamilton, Phila.,
Wintelbill, Smith & Co., Newburgh, N. Y.,
Wood Thomas. 2198 Wood, Phila.,
Wood Thomas.

Machine Screws, Makers of.
American Screw Co., Providence, R. I..........
Lyon & Fellows Mfg. Co., Williamsburg, N. Y... By the fellows Mig. Co., Williamsourg, N. Y. Machinists.

Demarcst, Joyce & Co., Brooklyn, E. D. Machinists. Tools, Mokers of.

Bialsdell P. & Co., Worcester, Mass.
Blundell Henry & Co., Providence, R. I.

Dibbie & Hine, New Haven, Conn.

Harrington Edwin, 15th et. and Ps. ave., Phila.

Star Tool Co., Providence, R. I. Machinery and Tool". Importers of. Churchill Charles & Co., 28 Wilson St., Finebury. London, England..... Mensuring Tapes. Eddy Geo. & Co., 353 Classon Asc., Brooklyn, N. Ment Cutters. Makers of. Whittemore D. H. Worcester, Mass Waittemore D. H. Worcester, Mass.

Metal Denlers and Brokers.

Ond N. L. & Co., 22 and 27 Cliff, N. Y.

Cort N. L. & Co., 22 and 27 Cliff, N. Y.

Crane D. Q., 284, John, 27

Gregg H. L. Co., 188 Walnut, Phila

Holmes & Lissberger, 285 & 387 Pearl, N. Y.

Phelps, Dodge & Co., Cliff, bet, John & Fulton, N.

Quincy J. W., 38 William, N. Y.

Thomson & Co., 213 and 215 A. A. Water, N. Y.

Van Wart & McCoy, 43 Chambers, N. Y.

Metallardists. Van Wetallurgists, Britton J. Blodgett. 339 Walnut, Phila. Brown Thomas M., 1123 Girard, Phila. Maynard & Van Rensselaer, 24 Cliff, N. Y. School of Mines, E. 49th, N. Y. Mining Spikes Roseberry Geo. D., Pottsville, Pa. Mire Boards. Stevens, G. M., Portland, Me. Molders' Tools. Carter H. & Sons, 290 Pearl, N. Y... Monuments, Granite and Bronze. National Fine Art Foundry, 218 E. 25th. Mouse Traps. Cotchemalive. Makers of Dietz R. E., 54 and 56 Fulton, N. Y. Nickel Platers.
Smith L. A., 42 Mechanic st., Newark, N. J.
New York Nickel Plating Co., 133 West 25th, N. Norway Shapes, Rollers of, Rowland Wm. & Harvey, 948 Beach, Phila. Note Broker. Gallaudet F. W., 3 and 5 Wall, N. Y. Gallaudet F. W., 3 and 5 Wall, N. Y.

Nurs. Bolta. etc., Makers of.

Ætna Nur Co., Southington, Conn
American Bolt Co., 20 Lawrence, Lowell, Mass.,
Camenter David, 40 connection, C.
Carrenter David, 40 connection, C.
Clark Bros. & Co., Milldale, Conn
Fuller Lord & Co., Boonton, N. J.
Haskell W. H. & Co., Pawtucket, R. I.
Roseberry Geo, D., Pottsville, Pa.
Flumb, Burdict & Barnard, Buffalo, N. Y.
Sternbergh J. H., Reading, Pa.
Union Nut Co., 78 Beckman, N. Y. White J. H., Newark, N. J... Ore Crushers.
Blake Crusher Co., New Haven. Ct.,
Ornamental Iron Work.
Miller Iron Co., Providence, R. I..... Paints and Oils, Dealers in. Devoe F. W. & Co., 117 Fulton, N. Y., Patent Solicitors.

However & Son, Phila. and Washington, D. C. Leggett & Leggett, Washington, D. C. Whitney J. A., 128 Broadway, N. Y. Picture Nails, etc., Manufacturers Richards T. C. & Co., 47 Murray, N. T. Richards T. C. & Co., 47 Murray, N. Y.

Pipes, Fittings, etc., Makers of.
Eaton & Cole, 58 John, N. Y.

McNab & Harlin Mig. Co., 56 John, N. Y.

McNab & Harlin Mig. Co., 56 John, N. Y.

Nelson, Finkel & Co., 43 E. 10th st., N. Y.

Pancoast & Maule, 227 Pear, Phila.

Chas. Gregg Mig. Co., 62 and 64 Gold, N. Y.

Pipe, Water and Gas, Makers of,

Birck R. A. & Co., 121 Leonard, N. Y.

Graff William & Co., Pittsburgh, Pa.

Morris, Tasker & Co., 15 Gold, Y.

National Tube Works Co., 78 William, N. Y.

Starr Jesse W. & Sons, Camden, N. J.

Warren Foundry & Mach. Co., Phillipsburg, N. J.

Wood R. D. & Co., 123 Broadway, N. Y.

Platon Packing.

Canfield John & Co., 181 Fairmount Ave., Phila,

James Glanding, 115 Queen, Philadelphia. Plane Irons. Manufacturers of. H. Chapin's Son, Pine Meadow, Conn... Middletown Tool Co., Middletown, Conf. Sandusky Tool Co., Sandusky, O... H. Chapin's Son, Pine Mesdow, Conn. Greenfield Tool Co., Greenfield, Mass. Ohlo Tool Co., Columbus, O. Stanley Rule & Level Co., 35 Chambers, N. Y Plumbage Lubricator. N. Y. Black Lead Works, 172 Forsyth, N. Y. Plumbers' Materials. Manufacturers of. Carr Wm. S. & Co., 106 Centre, N. Y. Pressos. Power, M. kers of. Am. Saw Co., 1 Ferry, N. Y. Peck Milo & Co., New Haven, Ct. The Stiles & Parker Press Co., Middletown, Ct. Pressure Blowers. Makers of. Sturtevant B. F., 72 Sudbury, Boston. Sturtevant B. F., 183

Pumps, Mchers of.
Douglas W. & B., Middletown, Conn.
Rumsey & Co., Seneca Falls, N. Y.
Union Mg. Co., 99 Chambers, N. Y.
Valley Mch. Co., Easthampton, Mass. Pyrometera. Brown Edward, 311 Walnut, Phila. Hailrand and Miners' Tools. Hogan, Clark & Sleeper, Boston... Ralls, Importers of. Congreve Chas. & Son, 104 and 106 John, N. Y. Smith Gilead A. & Co., 62 Broadway, N. Y. Smita Gread A. & Co., 52 Broadway, N. Y. Rails, Iron or Steel, Makers of, Atkins Bros., Pottaville, Pa. Cambria Iron Co., Johnstown, Pa. Cleveland Rolling Mill Co., Cleveland, O. Cleveland, G. Miswattee Iron C. & Troy, N. Miswattee Iron Co., Springdiel, Ilis. Razor Straps, Makers of. B. F. Badger, Charlestown, Mass B. F. Badger, Charteston M. Refrigerators.
Jewett John C. & Sons, Buffalo, N. Y.
Relling Mill Machinery, etc., Manufactus
Moore James, Cor. 16th and Buttonwood, Phila.
Rells, Chilled and Sand, Makera of,
Garrison A. & Co., Pittsburgh, Pa. Sash Chain.
Thomas Morton, 15 Murray, N. Y.
Sawa, Makera or,
Atkins E. C. & Co., Indianapolis, Ind.
Atkins E. C. & Co., Indianapolis, Ind.
American Saw G., I Ferry, N. Y.
Filint J., Rochester, N. Y.
Disaton Henry & Sons, Philin.
McNeice Wm., 515 Cherry, Phila.
James Ohlen, Columbus, O.
Peace Harvey W., Williamaburg, N. Y.
Spear & Jackson, 116 Duane, N. Y.
Wheeler, Maddem & Clemson, Middletown, N. Y.
Saw Frames, W. ood, Makera of,
Peace Harvy W., Williamaburg, N. Y.
N. W. Hills.
Tanner Wm. E. & Co., Richmond, Va.
Scales, Manufacturers of,
Knowles J. A., Jr., Lowell, Mass. Scales, Manufacturers of.
Knowles J. A., Jr., Lowell, Mass
Richie Bros., 4th near Coates, Phila.
Shatuck W. F. & Co., 113 Chambers, N. Y.
Scissors, Manufacturers of.
Rove & Post. 120 Chambers, N. Y.
Screws, Makers of.
American Screw Co., Providence, R. I.
Miles F. S., 205 Quarry, Phila.
Screws, Importers of.
Bruce Geo. W., I Platt, N. Y.
Gueutal George & Son, 30 W. 4th, N. Y.
Gueutal George & Son, 30 W. 4th, N. Y. Gueutal George & Son. 39 W. 4th. N. 1 Shovels, &C. Clement & Hawkes Mfg. Co., Northampton, Mass. Shovels, &C. Clement & Hawkes Mfg. Co., Northampton Skates. Clement & Hawkes Mfg. Co., Northampton Skates. Graham & Haines, 88 Chambers, N. Y. States. Workes. Workes. Workes. More than 19 Markes. Howeve Paul S., 760 South Broad St., Phila. Du Plaine & Co., 130 Callowhill, Phila. Stamped and Japanned Tip Wares. Jewett John C. & Sons, Ruffalo, N. Y. Scheider Jos. & Co., 58 Beckman, N. Y. Scheider Jos. & Co., 58 Beckman, N. Y. Steam Hammers, etc., Makers of. Dudgeon Bichard. 2 Columbia. N. Y. Speed Indicators, Makers of. Connecticut Cutlery Co., Naugatuck, Conn. Saneras Steel and Jrong Makers of. Connecticut Cutiery Co., Naumituck. Conn.

Squares. Steel and Toon. Makers of
Squares. Steel and Toon. Makers of
Stein Pamps, etc. Mr. Co., Steel Pearl, N.Y.

Carr A. 43 Cortlandt. N. Yunfacturers of.

Guild & Garrison. Williamsburgh, N. Y.

Hall C. Henry & Co., 32 Cortlandt. N. Y.

Philadelphia Hydraulic Works. Evelina street, en

of Third street. Phila.

Steen Traps.

Alonzo L. Jones. 150 S. 4th, Phila.

Steel Importers. Steam Trass.
Alonzo L. Jones. 150 S. 4th, Phila.
Steel Importers.
Carr J. & Idlev, & John, N. Y.
Cocker Bros., Sheffield, England.
Congreve Chas. & Son. 104 and 106 John, N. Y.
Hobson Francis & Son. 97 John, N. Y.
Jesson Win. & Sons. 98 and 93 John, N. Y.
Y.
Jesson Win. & Sons. 98 and 93 John, N. Y.
Thermons & Co., 24 Broadway. N. Y.
Sanderson Bros. & Co., 16 Cliff, N. Y.
Sanderson Bros. & Co., 16 Cliff, N. Y.
Sanderson Geo. & Co., 16 John, N. Y.
Van Wart & McCoy, & Chambers, N. Y.
Wardlow S. & C., 18 Gold, N. Y.
W. Hawksworth. Ellison & Co., 72 John, N. Y.
Steel Manufacturers.
Anderson & Woods, Pittaburgh.
Chrome Steel Co., Brobstyn, E. D.
Cleveland Golfus Alli Co., Careband, O.,
Gautter D. G. & Co., Jersey City, N. J.

Stone Crushing Machines.
Blake Crusher Co., New Haven, Ct. Stove Boards. Manufacturers of . Shepard Sidney & Co. Buffalo, N. Y. Shepard Sidney & Co. Bullato.

Stove Polish, Makers at.

"Gem" Stove Polish. 172 Forsyth. N. Y.

Twist Brills. Macers at.

Morse Twist Drill & Mach. Co., N.Bedford, Mass.,

Tackite Blocks, Makers at.

Burt & Co., 31 Peck Silp N. Y. Tackie Blovas Co., 31 Peck Slip N. Y.

Packs.
American Tack Co., 117 Chambers, N. Y.
Field A. & Sons, Taunton, Mass.
Grundy & Kenworthy, 165 Greenwich, N. Y.
Dunbar, Hobert & Whidden, S. Ablington, Mass.
Loring Sameel, Plymouth, Mass.
Dickinson Henry, 66 and 68 Reade. N. Y.
Trowels. etc., Makers of.
Rose Win. & Bros., 36th and Filbert. W. Phila.
Turbine Water Wheels, Manufacturers of.
Burnham N. F., York, Pa.
Stout, Mills & Temple Dayton, O.
Turbe Expanders.
Dudgeon Richard, 24 Columbia, N. Y.
Valves, Gass, Water and Sterm.
Ludlow Valve Mig. Co., N. Y.
Views. Judiow Valve Mig. Co., N. A. Sees, Sees, Sees, Sackus Viac Co., 28 Beekman, N. Y. Fisher & Norris, Trenton, N. J. Harrisburgh Foundry & Mch. Co., Harrisburgh, Pa. Hollidge E. C., Minneapolis, Minn. Merrill Chas. & Sons, 556 Grand, N. Y. Howara Iron Works, Buffalo, N. Y. Trenton Vise & Tooi Works, 101 & 103 Duane, N. Y. Wilson Mrg. Co., 37 Chambers N. Y. Water Filters. Trenton Vise & Tool Wilson My.
Wilson My. Co., of Chambers N Y.
Wilson My. Co., of Chambers N Y.
Water Filters.
Jewett John C. & Sons, Buffalo, N. Y.
White Lend, Manufacturers of
Brooklyn White Lead Co., 28 Maiden Lane, N. Y.
Jewett John T. & Gros, 23 S. Front, Phila, Pa.
Lewis John T. & Bros, 23 S. Front, Phila, Pa.
Wetherell & Bro. 1 N. Front, Phila
Wire, Manufacturers of
Gilbert, Bennett & Co., 273 Pearl, N. Y.
Prentiss Geo. W. & Co., Holvoke, Mass.
Townsend W. P. & Co., Pittsnugh, Pa.
Washburn & Moen My. Co., Worcester, Mass.
Wire Goods, Manufacturers, G.
Wire Goods, Manufacturers, G. Wrought tron Goods, Maker of, Maguire Jas. T., 115 Chambers, N. Y.



We call particular attention to our new Patent Ferrule, with its Clay Retorts, Fire Brick, Tile, &c, Supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

A. G. COES & CO.

The American Turbine Water Wheel Recently improved, and submitted to thorough scientific tests, by James Emerson, showing the following useful effect of the power of the water utilized, being the highest results ever known.

PERCENTAGE OF PART GATE. Per cent of whole 36 36 36 50.08 69.64 78.73 82 53 82.90 83.14 A full report may be obtained of STOUT, MILLS & TEMPLE, Dayton. O.

CHARLES E. LITTLE. Coopers' Tools, Turpentine Tools AND TRUSS HOOPS.

Merchant's Improved Doweling Machines.

SWAN & BROMBACHER. 33 & 34 Fulton Street, N. V. Mechanics' Tools,

Tool Cnests, Etc. Coopers' Tools

TUBAL CAIN METAL WORKS. 1320 Callowhill St., Phila.

Du Plaine & Co., METALS Old Metals, Turnings, Drosses bought or exchang

ffire Brick.

B. KREISCHER & SON., New York Fire Brick & STATEN ISLAND CLAY RETORT WORKS,

Established 1845. Office, 58 Goerck Street, cor. Delancy Street

East River, New York. The largest stock of Fire Brick of all shapes and sizes on hand, and made to order at short notice.

Cupola Brick, for McKenzie Patent, and others. Fire Mortar, Ground Brick, Clay and Sand. Superior Kaolin for Rolling Mills and Found ries. Stone Ware and other Fire Clay and Sard, from my own mines at New Jersey and Staten Island, by the eargo or otherwise.

Watson Fire Brick Manufactory. JOHN B. WATSON, Perth Amboy New Jercey,

FIRE BRICK.

For Rolling Mills, Blast Furnaces, Foundaires.
Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c. FIRE CLAYS. FIRE SAND. AND KAOLIN FOR SALE

SALAMANDER WORKS

Of Woodbridge, N. J. Manufacturers of all shapes and sizes of FIRE BRICK for Foundries, Rolling Nills, Blast Furmaces, Stove Works, Lime Klins, &c. A full-stock of McKeusle and other Cupolas. Also Fire Clays and Sand constantly on hand. Shipments made at the shortest notice. Sand

Office & Depot, Foot Bethune St., N. Y.

Salamander & Albany Fire Brick Works. Rathbone St., bet. Saratoga R. Near N. Ferry St., Albany NEWTON & COMPANY.

Successors to Palmer, Newton & Co., Manufacturer, and Wholesale Dealers in FIRE HER HER of every valety and shape, Stove, Range and Heater Linings, Fortatelle Clay Furnaces, Fire Clay, Fire Sand, Mica, Kaolin, &c. HORACE B. NEWTON.

CRUCIBLES

ADAM NEWHUMET. 1537 & 1539 N. Front St., Phila., Pa. For Steel, Brass, Nickel, Copper, Bronze, &c. Equal to any in the market, and all guaranteed.

For Keeping a full stock of all sizes on hand, and being confident of giving entire satisfaction we repectfully ask consumers to give us a trial.

A. HALL & SONS, Ferth Amboy, N. J. HALL & SONS, Buffalo, N. V.

FIRE BRICK of reliable quality for all purposes, manufactured of the best New Jersey Fire Clays. Also, MINERAL KNOIS HOCKINGHAM WARK, Fire Clay, Fire Sand, Kaclin and Ground Fire Brick.

Philadelphia Fire Brick

Clay Retort Works, AND KENSINGTON FIRE BRICK WORKS.

Office, 23d and Vine, Philadelpia. PHILIP NEWKUMET,

Successors to JOHN NEWKUMET, Proprietor manufactures 9-inch Fire Bricks, Tiles, and Blocks. for Rolling Mills, Blast Furnaces, Foundries, Gaz Works, Lime Kilns, Glass Houses, &c., &c Articles of every description made to order at ort notice, and in a very superior manner.
"CLAY RETORTS FOR SUGAR HOUSES."

Brooklyn Clay Retort and Fire Brick Works, Van Dyke Street, Brooklyn, N. Y.

Brick Presses.

BRICK PRESSES.

For Fire and Red Brick. PATENT STEAM GEARING For grinding Clay for Red or Fire Brikinds of Brick Machines in general

Oldest and Largest Establishment of the kind in the U. S. F. L. & D. R. CARNELL, 1844 Germantown Avenue, Philadelphia.

Manufacturers of Penn-ylvania Brick Machine, Little Giant Pipe Machine, Fire and Red Brick Presses, Clay Wheels. Tile Machines, Stampers, Grinding Paus. Brick Yards fitted out for running by steam or horse. Heavy and Light Castings. Send for circular.

L. A. SMITH, NICKEL PLATER,

UNITED NICKEL CO. OF NEW YORK Premium Awarded by the N. J. State Fair,

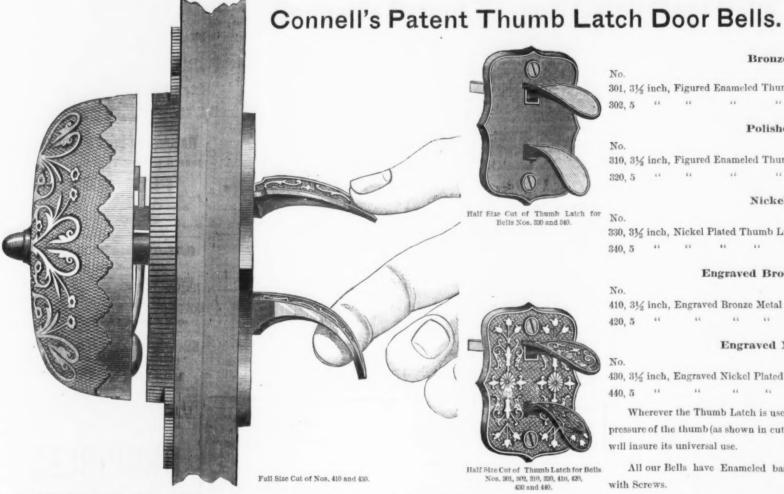
42 Mechanic St., NEWARK N. J

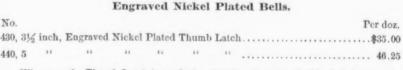
Licensed by United Nickel Company. NEW YORK

Nickel Plating

Works, 133 & 135 W. 25th Street, Office, No. 18 Park Place, ISAAC ADAMS, JE, Prest.

CONNELL'S PATENT DOOR BELLS.





Wherever the Thumb Latch is used, the simple operation of this bell by a gentle pressure of the thumb (as shown in cut), will be appreciated. Its beauty and cheapness will insure its universal use.

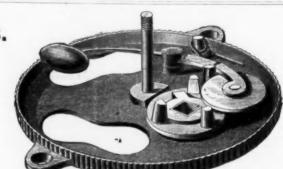
All our Bells have Enameled bases, are packed one only in a box, and complete with Screws.

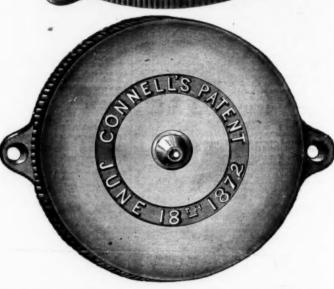
Connell's Patent Crank Door Bells.



Style of Nos. 110, 120, 130 and 140

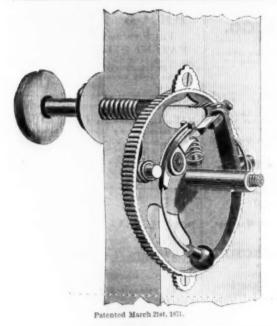
These Bells have but one Hammer, and strike on turning the Crank either way. They have only one Spring; are very simple, strong, durable, and of excellent tone; can be fitted to doors of any thickness.





Connell's Patent Pull Door Bells.





 Bronzed Steel Bells.

 No.
 Per doz.

 50, 3½ inch.
 \$23.00

 60, 5
 31.00

 Polished Brass Bells.

 No.
 Per doz.

 70, 3½ inch.
 \$30.25

 80, 5
 40.00

 Niekel Plated Bells.

 Nickel Plated Bells.

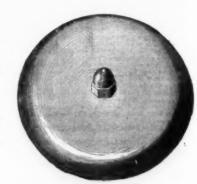
 No.
 Per doz.

 90, 3½ inch, Plain.
 \$35.00

 100, 5
 "
 46.25

 190, 3½
 " Engraved, same Pattern as No. 130
 35.00

 200, 5
 "
 "
 No. 140
 46.25



MANUFACTURED EXCLUSIVELY BY

THE HART, BLIVEN & MEAD MANUFACTURING CO.,

18 & 20 Cliff, and 243 & 245 Pearl Streets, NEW YORK.

Discount 50 per cent.

Send for our Catalogue and Appendix. Price \$4.50. Charge remitted on receipt of subsequent orders,

. Discount 50 per cent.

Keystone Saw, Tool, Steel and File Works,

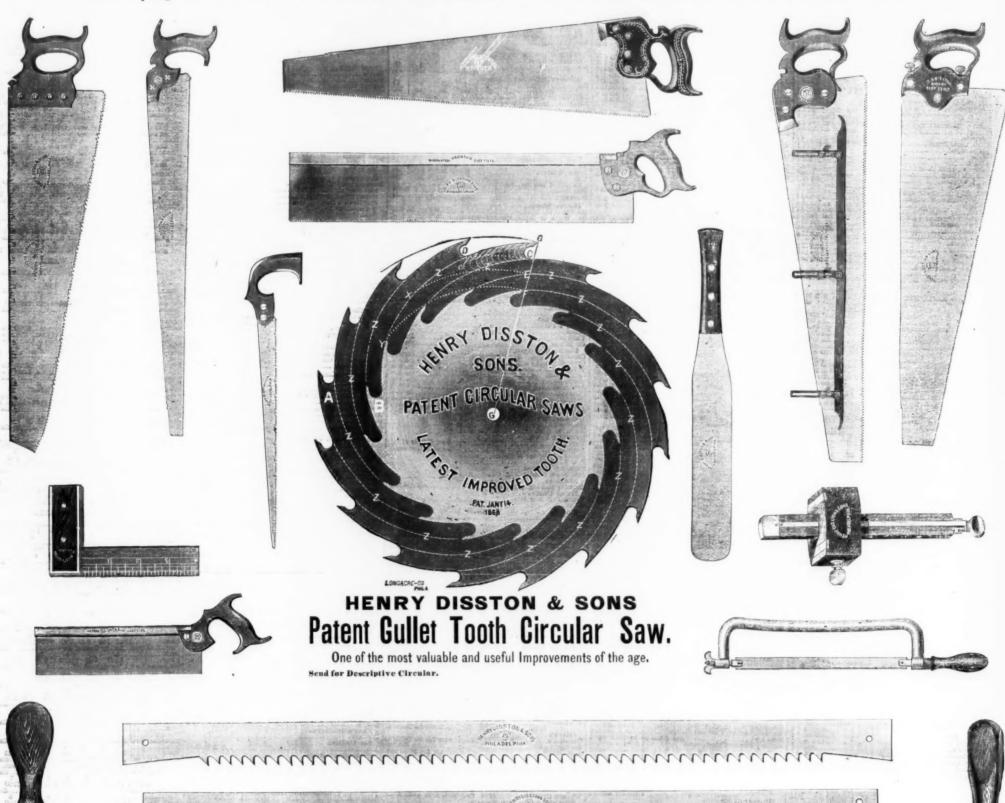
HENRY DISSTON & SONS,

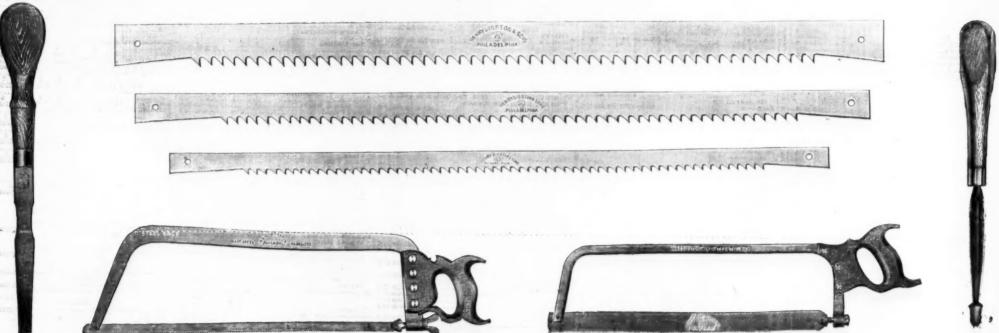
MANUFACTURERS OF

Warranted Cast Steel Patent Ground and Tempered Circular Mill, Mulay, Cross-Cut, Pit and Drag Saws.

Also Hand, Panel, Rip and Back Saws, Band Saws, Butcher Saws,

Compass and Pruning Saws, Segment, Shingle and Concave Saws, Saw Mandrels, Files, and all kinds of Labor Saving Tools for keeping Saws in Perfect Order. Also Manufacturers of Sheet Steel and all articles made from Sheet Steel.





New York Wholesale Prices, April 1, 1874.

HARDWARE.	Clips, Axle, dis 25	J. P. Verre Shingling Claw, Lathing,
Anvila. \$\psi\$ bold Cast Steel. \$\psi\$ bold Cast Steel. \$\psi\$ bold 12c; over 250 bold 12c; c. ground Armitage's Mouse Hole \$\psi\$ gold 11c; over 250 bold 12c; c. ground Wilkinson's \$\psi\$ bold 11c \$\psi\$ gold 11c \$\psi\$ g	14c Cont Shovels. \$\psi \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Undermill
Armitage's Mouse Hole gold Wilkinson's P B gold II Eagle Anv. 8. of B lic currency dis 15 a 15 a	Conl Hods.—Smith, Burns & Co	Claw, Lathing, Hinges Wrought S
Apple Pa trs.	Japanned	Providence
Apple Anv. 8, \(\psi \) bic currency dis 15 \(\psi \) 15a Apple P. 4 ers.	Cent Hods.—smith, Burns & Co	Screw Hoo Heavy Wei
Bay state, Paring, Coring and Slicing	Cackeyes	Screw Hoo
Bay State A'each Parer. \$11 00 @ 11 4.lig:::ning " 11 00 @ 11	50 Lock and Globe. dis 20-210 g	Hoes. Solid Shani
Lightholog "Feach Stoper and Halver "Augers and Bits." Snell Mig. Co. dis 15 @ 2 Russell Jennings. dis 18 Douglass Mig. Co., Extra. "No. 1. "N	Increase Wilson's. new list dis 15 % of Scisor's Pat. \$9'30, \$10'50—dis 20 % French Stand	Socket Riveted Ey Grub Planters'—
Douglass Mfg. Co., Extra.	9 Frederican Gis 40 Swift's Gis 40 Swift'	Scovill P
" Hollow Augers dis 3 Lves' Augers and Bits dis 30&14	0 5 Compasses and Dividers. dis 25 5	Relt. Ciothes Lin
" Gouge Lip Augers and Bits dis 30&10 " Hollow Augers dis 30&10 " Expansive Hollow Augers dis 30&10	US Excessor dis 30 x per set Stow & Wilcox dis 25 x Coopers' Tools.	Bench-Ho Bench-We
"Expansive Bits. dis 20 th Andrews' Bits. dis 20 th Clark's Expansive Bits dis 12	S Bradley	Wardrobe,
Cook's Patent Augers. dis \$\frac{1}{2}\$ dis \$4\$ Shepardson's Double Cut Rits. dis \$2\$	OS Corn Knives and Cutters. OS Bradler's	Wrought St Gerew Hooi Grass. Whiffletree
Grisword's Patent	Cast Steel P 1: C.net P 1: C.net P 2: C.net P 3: C.	Whiffletree Horse N Putnam's
Gimiet Bits		No
Stearns' #48 per doz—dis 22 Morse's Bit Stock Drills dis 3 Nobles Mfg. Co. C. S. Cut / agers dis 90&10		In lots 20 Ausable No
Watrous Salp Augers dis 10 A X = 8. Blood's \$12 50 @ 14	0% Curtain Pins. Silvered Glass	Pointed & f
Hant's	5 American Table	Clinton In lots of Brandage.
chweltzer Mfg. Co.'s	Embossed Gilt dis 10 % 00 Leather dis 30 % Door Springs dis 30 %	In lots of
led Jacket # doz 12 00 @ 12 4ann 8 # doz 12 50 @ 13 Double Bitted # doz 21 50 @ 22	50 Gray's, \$7.50 per doz—dis 40&10 % 00 Torrey's Patent. \$7.50 ₩ doz—dis 40&10 % 00 Patents's Japanned No. 5. ₩ doz \$6.00	In lots of
A xess and Augers and solar to the first and	Curtain Plus	Perkins Fi
ohn Leverett's	50 Japanned.	In lots of in Butfaic Fo
Balances.	1 Gross lots	Globe (Po
Bands.	Bradley's dis 25 % Adjustable Handled dis 10 %	in lots of hational (
on Rimnew list dis 15&5	% Ingersoli's Ratenetdis 25 %	In lots of 1
Beils. ind, Light Brass	Blacksmiths' each \$3 25 net Drug Mills each \$3 25 net American Drug Mills	No (Bi
4 be dis 50&10 be's dis 15&10 be's dis 10&10	Adjustable Handled	New Londo
restern Gong ne rook Cranks dis 10	t National. \$\psi\$ doz net \$\footnote{\psi}\$ (a)	Oreat Waste
crass (Plated list) new list dis 50, 1045- Projecte	Emery, Centure Chester—Regular Nos. # 5 7c; Washington Mils—Regular Nos. # 5 4c; dis 5 @ 10 <	UB. In lots of 1 Star Brand Morgan
Kentucky "Star"	Enameled and Tinned Ware.	Horse Sh
Texas dis 20±10 all dis 15	Sauce Pans, Glue Pots, &c. dis 15 % Kecutcheons. Brass Thread. dis 00&10 % Faucets.	Mule Shoes.
necisinths dis 15 oulders' dis 15	Faucets. dis 00 %	Brass In lots of 500
Blind Fusteners. an Sand's	0 Star	Ames' Butch Shoe
ashbura's Patent	Taylor's Pattern dis 20&10 % Wood and Metallic dis 40 %	Shoe Hay and Stra Knobs. Base—Comm Plush Elastic
Bolts.	Nicholson	Plush Elastic
arriage and fire, Abna Nut Co	J. & Riley Carr's 5 50 to £ gold 5 75 to £ gold 5 75 to £ gold 6 75 to £ gold 6 75 to £ gold 7 7	Lanterns Brady's Pater
rought from Barrel	Butcher's 500 4 gold Walter Spencer & Co.'s "Diamond" 525 to £ gold	Yankee De Beone
arriage and Tire, Common. dis 70210 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Spear & Sacason Spear & Souto & gold Hargreaves, Smith & Co.'s 5 00 to £ gold Jowitt's 5 25 to £ gold	Ladles. Melting. Lanterns Lanterns Lanterns Lanterns Lanterns Lanterns Locks an Cabinet—Eag Cabinet—Gay Trunk.
agie, Philadelphiadis 10 @ 50&10 % telfy's Phila. Norwsy fron Finished Pointsdis 50&5 % unadelpais Pattern, P. S. & W	W. K. & C. Peace's "Imperial" 5 00 to £ gold R. Ibbotson 500 to £ gold	Trunk
re, Bessether Steel, Hubbard & Curtiss	Fisher's 475 to £ gold Goodlad's 400 to £ gold	American Loc Plate Pad
ve, R. B. & W. dis 10 ?	Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold Horse Rasps	Pad. Yale Lock Co Sargent & Gr Trenton Lock
dis 15 9 dinne	Acine 37 00 each net Manyille, No. 2	Branford Norwich
Soring Machines. !logg's	Knox, with 4-inch itselfs 500 each net 600 each net	Branford. Norwich Russell & Eri Norwalk. Nashua. Mailory, Whee P. & F. Corbin Parker & Whi Jacobus & Ni
Regular dis 15 5 ouglas Mfg. Co. dis 20 5 ordicing Machines each \$18 00	Excelsior, No. 1. 4 25 each net	P. & F. Corbin
## ## ## ## ## ## ## ## ## ## ## ## ##	Diamond	Mallets. Hickory and I Meat Cuti Dixon's (P. S. No
lson Mfg. Co. new list dis 10 z offord's Putent dis 40 z blie's Patent dis 40 z	Empire 6 38 each net 1 4 00 each net 1 Eureka. No. 1, 7-inch isoli 8 00 each net 1	Dixon's (P. S.
rinolomew's American Ball	K. F. M., 45-inch Roll. 6 00 each net 1 6-inch Roll. 5 50 each net 1 6-inch Roll. 6 00 each net 1	# dox. Hales'. No. # dox. Miles Challeng
Bull Ringsdis 50 % Bung Hole Borers. mmon and Ringdis 95 %	"Convex Brass Fluter, Sad Iron attachment, \$1.75 Domestic Fluter	dtles Challen
Hard Staples	Sauce Pans, Glue Pots, &c. dis 20 & 25 & Sauce Pans, Glue Pots, &c. dis 15 & Sacuttcheons.	P doz.
dis 27 % dis 27 % new list dis 10 % 2 % % 5 6 7 8 9 9	Hay, Manure & Spading dis 25 5	Voodraff's (P
		merican
25 \$73775 \$10725 \$3875 \$4975 \$49750 \$54700 Suttm. ought Brass	Smith, Burns & Co., "Excelsior" Polisheddis 85 5 # doz	Each. Nolasses itebbins' Patt luned ends. atent Seif-Me
t Fast Joint, Narrow	Gauges. 2 8 5 6 7 8 1 Marking dis 40&10 c	atent Seif-Me Mortars a
Mayer. dis 50 % Parliament dis 50 % e Pin. dis 40% 10 %	Hammers. Emmet Hammer Co. dis 10 \$ 1	Mouse Tra
ought Fast Joint, Narrow	Maydole'sdis 5 % S Cheney'snew list net Verreedits 6 d	quare, "
ought Table and Back Flapsdis 3) \$ mer Blind Butts	Geneva Hand Futer \$15 00 per doz net Champion, 6 incn rolls \$8 00 each net Forks \$8 00 each net \$1 00 eac	Atent Seif-Me Mortars a ron Mouse Tri Vood Choker. Cound, Wire quare, age, Nails.—See Nuts and Vous. Vashers. Oil Stones.
ker's Blind Butts	Minot & Co	Vashers Oil Stones. Vashita No. 1
x's Surface Blind Hinges, Nos. 1, 8 and 5dis 50 € No. 30dis 55 € 10 €	Hammer and Hatchet	Slips.
1	Brad Awl Hickory Firmer Chisel, ass'td 5 25—dis 20±10 5 0 Brad Awl	Vashers. Oil Stones. Vashita No. 1. Slips. lindostan Slips. Oliers. olimsted's. roughton's. [alleable.
e American Spiral Spring Butt Co	Apple " uss'td " 6 03—dis 100210 \$ M large " 7 00—dis 100210 \$ C	ommon Tin
2 E. B	File 5 50 dis 104:10 \$ 30 dis	Picks,
Colt's	Hangers. large " 6 50 dis 102 10 % W	Picks, Pasnoe R. R Vashoe Coal, of Picture Na ichards Pater
ards.—Horse and Curry	Harness Snaps. Henshaw's dis 25&10 g	ichards' Pater Pinking Ir Planes. hapin's, 1st qu
arpet Siretchers. per doz \$2 00; dis 33% \$	Fitch's	suddany 1001
as well wood Wheel, Bed. dis 30&10 50 50 50 6 10 50 6	Hangers. Large 650-dis 10610 \$ 5 5 Hangers. Bara Door. Tevised list dis 60&10 \$ 6 5 Harness Snaps. dis 25&10 \$ 6 5 Harness Snaps. dis 25&10 \$ 6 5 Henshaw? dis 30 \$ 6 5 Fitch dis 30 \$ 6 5 Andrews dis 30 \$ 6 Andrews dis 30 \$ Andrews dis	hio Tool Co., wasco Tool C
a and Wood Wheel Plate	Shingling, Nos. 123. 9 doz 97 50 8 50 8 50 Claw, 123. 9 doz 8 50 9 00 9 50 H Lathing, 123 8 doz 7 50 8 50 H	owland's. 1st
noin	Shingling, Nos. 123 # doz #7 25 8 00 8 75	Chi
113 9% 9 8% 8% 8c 8c 8-16 % 7-16 %	Lathing, "128 # doz 7 55 8 50 9 25 Hurd's, "128 # doz 7 50 8 25 9 00 Hurd's dis 20 f	" Spe
ce, 54-10-2	Claw, "128. \$\ \text{doz} \ \text{80} \ \text{00} \ \ \text{850} \ \ \text{90} \ \text{00} \ \text{Claw,} \"128. \$\ \text{\$\text{90}} \ \text{00} \ \ \text{90} \ \ \text{90} \ \text{00} \ \text{00} \ \text{00} \ \text{00} \ \text{00} \ \text{00} \ \text{50} \ \ \text{90} \ \text{00} \ \text{50} \ \text{90} \ \text{00} \ \text{50} \ \text{90} \ \text{00} \ \text{50} \ \text{50} \ \text{90} \ \text{00} \ \text{50} \ 50	apin'saudard Rule (
man Halter Chain new list, Jan. 1, dis 10 s man Coil new list, Jan. 1, dis 10 s & Chain, Iron dis 50 s	Shingling, Nos. 12 8. \$\psi\$ doz \$6 50 700 750 Claw. 12 8. \$\psi\$ doz 7 25 775 8 22 Dozent \$\psi\$ doz 7 25 \$\psi\$	Pumps. Pumps. ouglas Cistern
halk.	Yerks & Plumb. 123 Pdoz 6 50 7 60 7 50 Shingling. Nos. 123 Pdoz 67 00 7 50 8 0 Cs	Raken. st Steel
ψ gross, 75c. e. ψ gross, 90c yψ18. ψ gross, 14c	Claw, 123 \$ \$ \$ \$ \$ \$ 9 \$ 25 \$ \$ \$ \$ \$ 9 \$ 25 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Razor Stra
### ### ### ### ### ### ### ### ### ##	Eathing, 128. 9 doz 9 00 9 50 10 00 Lathing, 128. 9 doz 8 00 8 50 9 00 Ht	ant's
	Broad, 123. 9 doz 9 00 10 00 12 00 Ch 45 6 9 doz 14 00 16 00 18 00 Ir 7 9 9 doz 20 00 22 00 Ir	Rivets.
ged Firmers. dis 40 to 40& 10 g cher's. 80 to £ gold—new hat	Elephant. dis 25 g Co Shingling Nos. 123. \$\psi\$ doz \$800 800 900 Claw, 123. \$\psi\$ doz \$9 00 800 900 100 St	pper Rivets a Rods.
anged Firmers	Shingling, Nos. 123. \$\psi\$ doz \$8 00 8 00 9 00 Claw, 123. \$\psi\$ doz \$9 00 9 50 100 Storage Shingling Shi	Pode.

	notesale	۲	rı	CE	S
5 %	J. P. Verree & Co. Shingling, Nos. 128. Claw, 128. Lathing, 128. Underhil's	doz #	7 00 7 50 7 00	7 50 8 00 7 50	In 5 % 8 00 8 50 8 00
25 00 5 %	Shingling, Nos. 123	dos	7 25	8 00 8 50	8 75 9 25
OZ OZ	Hinges. 12 4 Hinges. 12 4 Wrought Strap and T. Providence Plate 1 6 and 8 in. is Screw Hook and Strap Heavy Welded Hook. 18 Screw Hook and Eye. 18 Hoes.	ot 11c. t 9%c. 8, 10, 1 14 to 8	distant 10.8	%c}	k10 %
0 %	Screw Hook and Eye	to 12 4 in & % to 1	1n., 9 up, 8 in., 9	c ¥c } dis ¥c }	10 % . net
0 % 5 %	Hoes. Solid Shank, C. S. Socket. Riveted Eye. Grab. Planters'—Winsted. Scovill.	P doz 1	8 00-	dis 20 @	30 x
3855	Scovill Pattern (Winsted)			add add S bba	20 % 10 % 314 % 20 %
XXX	Reit. Ciothes Ling. Bench—Skitner o	per	uoz \$. dis 60a 8 00, dis	50 % 10 % 30 %
XXX	Bench—Weston's No. 1, \$8:50; "—McGill's. Wardrope, Japanned. Har and Coar."	No. 2, 83 (87-10 0 per c w list	per dos dos, dis dis 603 dis tade	10 %
t 7e	Ciothes Line Bench-Skimar a itserh-Hotchkiss* \$5 W * nov. Bench-Weston's No. 1, \$6:50; — Mccilli's. Wardrobe, Japanned. Har and Coaf Wrought Stanles and Hooks and Gerew Hooks and Eyes, revised i Grass. Whitteree-Patent. Horse Nalls.	Staple let	6d1	60, 10& dis dis	10 % 70 4 2 1 % 30 %
S MANN	No	7 96c	8	9 34c	10 23c
×	Ausabie No	25c 26c 26c 17c	8 240 250 160	9 38c 34c 15c	10 23c 28c 14c
IL XX	No5 6	zic	8 30c	9 22c	10 21c
× × 00	In lots of 500 lbs., dls. 5 %. American Pressed. No	300	8 30c	9 20e	10 90c
00 00 00 00 00 00 00 00 00 00 00 00 00	No	e). 7 26c	8 25c	9 24c	10 28e
C 00 % % %	Globe (Pointed and Polished)	26c	8 25c 8	9 24c	10 88c 10
	No		. 3	sh.	28c
	No		24c). 8 27c	9	10 25c
0	18 lots of 500 lbs., 5 % discount. 1000 lbs 75% % discount New London Horse Nails.	7	8	9	10
	No	Sie Sie	24¢ 26¢	25c	23c 34c 16c
	Horse Shoes. Burden. R. I. Horse Shoe Co., Perkins Patt "R. I. Pattern Mule Shoes." R. I. Pattern	ern	. W k	or 95 S	XXX
	Kettles. Brass		p	10 55c r	iet
	Ames' Butcher Knives			dis 3: dis 1: dis 3:	3 3 3
1	Elastic End	educed	list d	is 104k 10	18 3
A 40	delting			dis 20	X
1	Locks and Latches. abjust—Eagle abjust—Gaviord			dis 16 dis 16 dis25	* *
2084	runk Ontinental hepardson's merican Lock Co			dis 10 dis 15 dis 20 dis 334	* 8
HAST	Lanterns- rady's Patent Etna ankee e Beque L-ocks una Lantehes ablact-Eagle rouk - Gaylord rouk - Gaylord	dia 50, i	and 2 5	for case dis 40 dis 20	A POOR
ENAN	'ale LOCK CO. argent & Greenleaf. renton Lock Co. granford. orwich. Frwin. orwich. sabtus. fallory, Wheeler & Co. & F. Corbin. arker & Whipple.	Ne		dia 45 g	N
			extra	for cas	h. BP
B	Meat Cutters.		di	s 10&10	× 0
Al	alcs			dia 25	S All
1 M	tles Challenge		****	dia 20	- T
N	₩ doz	200 \$22 00	\$900 \$97 (400 0 \$40 0 dis 10	O G
AN	merican	\$15 00	\$15 00 die 25	150 \$18 0 \$25 &5 6 8 75 0	O St
P	atent Seif-Measuringper do	E 842	00-al	204k 10	St
WR	Mouse Traps. ood Choker.	P doz	holes.	16 @ 18 2 00 ne	t Fi
C	ge, Nails.—See Trade Report. Nails.—See Trade Report. Nuts and Washers. large, 5% ashers. large, 1arge, 5% ashers. large, sahta No. 1.	doz :	2 00 to	dis 10	Tr
W	" Slipa	ic; sn	1811, 90	off list	Ire Do
OI	oliers.		6c dis 10c dis	10&10 ; 10&10 ;	At Ed
Micco	onghton's alleable mmon Tin "Zinc "Brass and Copper	ре	doz	8 25025 1 5 00 net dis 30 1 dis 30 1 dis 23 1	Ch
W	ashoe R. R dis 25 % Nos. 1 \$4 do3 \$14 do 20 ashoe Coal, dis 20 % \$8 50 9 do	15-00 16 10-00 11	8 -00 17 -00 13	4 5 -00 18-00 00 15-00	P.
Ri	chards Patent Pinking fromsperd Planesspir'd	di oz #3 (40 @ 0—dis	404:10 g 604:10 g	Per Bla
Oh	ndusky Tool Co., 1st quality	2)		dia 30 % dia 40 % dia 30 %	Die Bri Wo Gar
Ho Ba Pli	Plaking Irwas per d Planes planes planes poin's ist quality dusky Tool Co. 1st quality d do Tool Co. 1st quality (Sciota) 2d quality (Sciota) 2d quality (Sciota) 2d quality (Sciota) 2d quality dependent of the plane is quality dependent of the plane irons, Butcher's 3d 5d quality dependent of the plane irons, Butcher's 3d 5d quality dependent of the plane irons of the pla	to & s	dis	dis 40 % dis 30 % 20&10 % new list	Gar V Tre St. He
	" Chapin's. " Ohio Tool Co. " Spear & Jackson's. 5 % Sandusky Tool Co	to £ g	old—i	10&10 % als 10 % new list dis 10 %	Si Ni Wil
Sta	apin's undard Rule Co.'s New Adjustable.		dis	604:10 %	Bac Bui Fis Tre Bot
Do	uglas Cistern, etc. S. & F Laken, et Steel	ne	w list w list	dia 25 % dia 20 %	Pug
	st Steel. \$8.00 9.00 10.00 \$8.00 9.00 10.00 Lazer Straps, uthe Emerson nt's noman. Liveta.		14 1	dis 25 %	Rev
Chi	nt's noman Livets a and Tinned oper Rivets and Burrs Lods		dis 16	dia 25 %	Cor. Gal Gal
Coj	ada.		- ALME	- 10 %	Tin

300	Rollers. Barn Doorrevised list die 60.	k10
000	Manila% inch and larger P B	1636 17
5	Repe. Manufacturers' Manifacturers' Manifacturers' Manifacturers' Manifacturers' Manifacturers' Manufacturers'	1734 16
1	Simal. % inch and larger w 75	15%
	" Hay Rope # 15	16
	Rules. Chapta's Boxwood	10
	Chapin's Boxwood. dis 600 Chapin's Povry. dis 506 Hobbard & Cortias Mfg. Co. Ivory. dis 806 Stanley Rule and Level Co.'s Ivory. dis 606 Stanley Rule Co.'s Boxwood. dis 606 Stanlard Rule Co.'s Boxwood. dis 606 Stanlard Rule Co.'s Boxwood. dis 606 Stanlard Rule Co.'s Boxwood. dis 606	10
	Sad Irons.	10 ;
	Sad Irons	ne B B
	Beader & Adamson's (Flint) @ to 134	еап
	Assorted. 4 25 Star. 9 ream 8 Emery 9 ream 9 6 50 @	13 25 11 56
	Cowdin Mfg. Co	10 9
1	" Emery Paperper ream \$6 50 to \$1	1 50
1	Sash Locks. dis Clark's. dis 20 @ Norwich. dis 20 @ Sash Clark's d	20 % 25 % 15 %
I	man weights.	
١	Solid syee	10 %
I	\$ doz. \$15 00 \$2 Saw Rods. dis	1 00
l	Saw Reds Saws Spear & Jackson's Sw Co. Insw Perforated Cross Cuts, all kinds Sic & Jam Saw Co. Insw Ser & Jam Saw Co. Insw Ser & Jam Saw Co. Insw Ser & Jam Ser & Jackson's Sic &	rold
l	Am. Saw Co	list
l	All else	10 克克斯
l	" Mill dis " Cross Cut dis " other kinds dis 12	25 % 15 %
	Livingston's Framed Wood. dis	5%
	Wm. McNiece's hang, Cross Cut and Cir- cular new list dis	10 %
ľ	E. M. Boynton's Lightning, dis Jue 5 s for immediate c	ash 15 z
i	Saw Sets. Nash's dis Semis'. dis 1	0 % 10 %
1	Bemis' dis Alken's Genuine dis Hotchkis' dis Common Lever per doz \$1 80	13 % 10 %
	Scales.	
-	Curabul's dis 1 Srown's hew list dis 15 % Fairhanks hew list dis 15 % Gove's dis 15 % Sairhanks	0 %
17 / 18	Shattuck's Counter and Uniondis 1 Chatillon's Grocers'dis 2 Eureka dis 2	5%
22.	cale Beams dis 2 No. 1 300 to 1200 lbs 90 c 9 c	5 s
4	Screws.	WI
	Screws, Imericar list of Jan. 1, 1874. Flat Head Iron. dis 52, Bound Head Iron. dis 52, Round Head Brass. dis 52, Round Head Silver Capped. dis 254. Haud fadl. dis 83. Coach, Fatent Gimiet Foint. dis 86. Bed Brass. dis 86. Coach, Fatent Gimiet Foint. dis 86. Bed Brass. dis 86. Bed Brass. dis 86. Garden Fatent Gimiet Foint. dis 86. Bed Brass. dis 86. Bed Brass. dis 86. Garden Fatent Gimiet Foint. dis 86. Bed Brass. dis 86. Bed Brass. dis 86. Bed Brass. dis 86. Garden Fatent Gimiet Foint. dis 86. Bed Brass. dis 86. Bed Bra	8 8
	Round Head Silver Capped. dis 25&1	20%
	Hand Rail. dis 33). Coach or Lag. dis 30c; Coach, Patent Gimlet Point dis	6%
E	Bed. list : English—Nettlefold & Chamberlain's Flat	et
h	Head Iron. dis 52 & 1 dis	18
В	Brass dis lt Round Head, Iron dis 56 Brass us lench—Iron, Wilson's dis 26 "—Wood dis 12	et
H	" — Wood. dis 15 fand. dis 25 & 10 ack—Bell Bottom. dis 15 & 10 fand.	14
	Seviles.	- 1
	Seviles.	- 1
	Seythes	00 00 00 00 00 00
B	Scythes See Grass 9 doz \$9	00 00 00 00 00 00 63 %
B	Seythes Seyt	00 00 00 00 00 00 63 %
Section	Scythes See Grass 9 doz 89	00 00 00 00 00 00 63 %
Section	Scythes See Grass 9 doz 89	00 00 00 00 00 00 63 %
B CICLE	Scythes Seythes Seythes Seythes Seythes Seythes Seythes Seythes Silver	00 00 00 00 00 00 63 %
B CICHE ALLINA	Scythes Seythes Grass 9 doz 89	00 00 00 00 00 00 00 00 00 00 00 00 00
B CICHE ALLON	Scythes Seythes Grass 9 doz 89	000000000000000000000000000000000000000
B CCCC A ABOUT	Scythes Seythes Seythes	00000000000000000000000000000000000000
B CCCC A ABOUT	Scythes Seythes Seythes	00000000000000000000000000000000000000
B CCCC A ABOUT	Scythes Seythes Grass 9 doz 89	00000000000000000000000000000000000000
B Se Cicke Alberta	Scythes Seythes Seyt	000000000000000000000000000000000000000
B Si Cicke Albert	Scythes Scythes Cast P doz 89	00000000000000000000000000000000000000
B Se Circles A A A A A A A A A A A A A A A A A A A	Scythes Scythes Scythes Scythes Scythes Scothes Scot	00000000000000000000000000000000000000
B Side Side Side Side Side Side Side Side	Scythes Scythes Scythes Scythes Scythes Scott Sc	00000000000000000000000000000000000000
B Side Side Side Side Side Side Side Side	Scythes Scythes Scythes Scythes Scythes Scott Sc	00000000000000000000000000000000000000
B COCK ARROW I BROWN I SHOULD BE SHO	Scythes Scythes Cast P doz \$9	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B COCK ALLON IT BE SECOND IN THE SECOND IN T	Scythes Scythes Cast P doz \$9	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B CCCC A ABOUT I BE SEE COME TO THE SEE COME T	Scythes Scythes Cast P doz \$9	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B CCCC A ABOUT I BE SEE COME THE SEE COME TH	Scythes Scythes Cast P doz \$9	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B CCCC Attack of the Committee of the Co	Seythes Cast Fames P doz \$9	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B COCK ANDIN TRIBET TO THE STATE OF THE STAT	Seythes Cast Fans	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B COCK ARRIVE SO THE STREET SO THE SECOND STREET STREET STREET SO THE SECOND STREET ST	Scythes Cast	ODDOOD OO THE SERVICE OF SERVICE SERVI
B COCK ARRON ITRIC OF THE STREET THE STREET OF THE STREET	Scythes Cast	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B COCK ARRON ITRIC OF THE STREET THE STREET OF THE STREET	Scythes Cast	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B COCK ARRON ITRIC OF THE STREET THE STREET OF THE STREET	Scythes Cast	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B CCCC ALUNN INTO THE INTERPRETATION OF THE PROPERTY OF THE PR	Scythes. Scribes. Scribes. Cast	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B CCCC ALUNN INTO THE INTERPRETATION OF THE PROPERTY OF THE PR	Scythes. Scribes. Scribes. Cast	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B CCCC ALUNN INTO THE INTERPRETATION OF THE PROPERTY OF THE PR	Scythes. Scribes. Scribes. Cast	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
B COCK AMON FRANCE TO THE RESIDENCE TO CONTRACT THE SECOND THE SEC	Scythes. Scott erman Steel, Grass. Cast	00000000000000000000000000000000000000
Se COM ARION TRACES OF THE RESIDENCE AND ADMINISTRATION OF THE PROPERTY OF THE	Scythes Coat	OOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOOO
Se COM ARION TRACES OF THE RESIDENCE AND ADMINISTRATION OF THE PROPERTY OF THE	Scythes Coat	00000000000000000000000000000000000000
Se COM ARION TRACES OF THE RESIDENCE AND ADMINISTRATION OF THE PROPERTY OF THE	Scythes Coat	SOUDDOODS THE SERVE THE SERVE THE SERVE SE
Se COM ARION TRACES OF THE RESIDENCE AND ADMINISTRATION OF THE PROPERTY OF THE	Scythes Coat	SOUDDOODS THE SERVE THE SERVE THE SERVE SE
Se COM ARION TRACES OF THE RESIDENCE AND ADMINISTRATION OF THE PROPERTY OF THE	Scythes Coat	00000000000000000000000000000000000000
B COM AND THE STREET SECOND STREET STREET STREET SECOND STREET ST	Seythes Cast	SOUDDOODS THE SERVE THE SERVE THE SERVE SE
B COM AND THE STREET SECOND STREET STREET STREET SECOND STREET ST	Scythes. Scott erman Steel, Grass. Cast	00000000000000000000000000000000000000

Galvanized	Telegrap	h, Nos.	. 8 and	9	# 10c @ 11c # 11c @ 12c 115c @ 125c
66	60	**	10 and	11	# 11 La @ 12 La
Ann ealed	Fence, N	os. 8 at	nd 9		die 86 @ 40 1
" G	rape, "	10 to	14		dis 35 @ 40 ; dis 35 @ 40 ; P 35 8 (@ 9 ;
Fence Stap	les	******	******	*******	P B 84 @ 99
					7 00 to h gold
Wrench					
American A	djustable		******		din 45 9
Daxter's Ad	inatable.	· 8 ··			dis 20 9
Colling & C	O. B	*******	******		dts 40 9
Coes' Genu	ne				din 404:5 9
" Patte	rn (Wrou	ght)			dia 50 %
Lindsan's D	(Malle	able)			dis 60& 10 1
Taft's Patte	rn				dis 70 f
Davis' Pater	at Duplex				w list dis 25 9
Bemis & Ca	ll's Pater	t Com	binatio	D	dis 2046 %
Wringe	rs.				
Universal-	Extra			19	doz \$72 00 net
Novelty	********				dog 72 00 ne t
Sherman					dos 07 00 net
Reliance Providence.					dog 07 00 net
Monitor					dos 67 00 net
					HOS OF OUTER
		-	-		
			_		

TIN WARE AND TRIMMINGS.

50	Total common and	_
	STAMPED TIN WARE	
50,50	Basins.	
50 50	Wash Basins, Handled, Plain Stampeddis	25
76	Per dos	113
'n	Wash Basins, Hundled, Retinned.	8.0
c	Inch	118
	Per dog84'00 4'50	5-6
%	Wash Basins, with Feet, Plain Stampeddis	25 1
00	Inch	383
	Fer dox	37
K	Inch 10 11 11 11 11 11 11 11 11 11 11 11 11	20 7
d	Per doz	13 % B: (h
d	Wash Basins, Stampeddis	25 1
31	Inch10 10%	115
3	Per doz\$1.70 2.10	2.50
g,	Per dos	11
K	Wash Basina Retinned	1.56
6	Inch	112
ž.	Per doz	8-51
ŝ	Inch Shallow10	11
5	Per doz	2.00
6	Covers.	
6	Bucketdis	10 4
e	1 pt. 1 qt. 2 8 4 6 8 10 13	gt.
	Per gross\$2-25 8:00 4:00 4:50 5:75 7:75 8:75 9:25 18:	UÚ
6	Collee Potdis	10 %
	Per gross \$1:56 1:50 1:75 9:58 6-	gt.
6	Potdia	10 €
6	Inch	10%
6	Per gross\$5.50 6.00 6.75 7.25 8.00 8.50 1	0-25
9	Inch	13%
4	Tee Fortle Pressys and Covers	9-00
. 1	Inch	10 %
1	Per gross	0-50
: 1	Inch 9½ 10 10½ 11 11½ 12½	1856
	Per gross\$11.25 13.00 14.00 15.00 16.00 21.09 2	4-00
П	Pints V 1 1 1 Charts 1 2	25.5
1	Per doz 50 00 70 10 Per doz 90 1-96	1.50
1	Dipper Bowls, Retinneddis	# S
П	Pints% % 1 1% Quarts 1 2	236
	Per doz. 75 '95 1'00 1'15 Per dog 1'30 1'55	1.90
1	Covers	
. 1	Dish Pans, Tinneddis	25 K
1	Quarts 7 8 10 14 17 21 1	10
1	Milk Care Clair sterrord 11.00 18.00 18.00 18.00 3	(-00)
1	Ouerta V 1 1 V 9 8 4 8 6	20.00
	Per doz \$ '85 1'05 1'30 1'45 1'85 2 40 2'90 8'15 4'40	5-00
1	Milk Pans, Retinneddis	5 %
1	Quarts 1 1% 2 3 4 5 6 8	10
	Let doz \$1.12 1.40 1.60 1.30 5.12 \$.00 8.40 8.80 2.30	9.00
1	Inch # 7 9 9 W	0 %
ı	Per gross	100
1	Pans. Tinned 8 10 14 17 25 20 20 20 20 20 20 20 20 20 20 20 20 20	. 00
L	Cannisters, Commondis 1	0 4
L	Pound 1 2	3
L	Per doz	1.52
H	Poung	0%
1	Per doz.	000
1	Candlesticks, Japanned.	0 6
13	Cannisters, Common dis 1 Pound 1 Per doz 8 10 1-00 2-20 Cannisters, Hingod dis 1 Per doz 12 2 3 4 Per doz 3 4 1-5 2-75 2-60 3-75 4 Per doz 3 4 1-5 2-75 2-60 3-75 4 Per doz 4 1-5 2-75 2-60 3-75 4 Per scos 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3,
	Per gross	'00
11	Cake Boxes, found per nest, \$3°25, dis 10	20
1	Manage Transmitted	

	Per gross. \$400 \$5 Toy Cups. Flaring, nests of (3) per gross. \$250, Toy Pails, Covered.		
	Toy Rattles	dis 10 dis 10 dis 10	50 K K
	PLANISHED TIN WARE.		
	Planished Coffee Pots, Rounddis 26 Each	@ 50	8
	Fints 1 2 3 4 5 4 7		
	Planished Tea Pots, Round		
I		2 30	× 5
i	Pints 1 3 4 5 6 Planished Pepper Boxes, No. 1 per dos	- 81-5	12
ĺ	Planished Flour Dredges, No. 8, \$2.10; 4, 2.45 @ do Planished Round Coffee Biggins.	ten.	«
1	Planished Pepper Boxes, No. 1 per doi Planished Fepper Boxes, No. 1 per doi Planished Round Coffee Biogrins Planished Round Coffee Biogrins Science Biogrins Science Planished Oval Coffee Biogrins 1 140 1-00 Planished Oval Coffee Biogrins 1 per doi: 100 1-00 Planished Oval Coffee Biogrins 1 per doi: 100 1-00 Planished Oval Coffee Biogrins 1 per doi: 100 1-00 Planished Poxil Coffee	20	0
1	Pints 2 3 4 5 6	8	~
į	Pints. 2 3 4 19 190 190 190 190 190 190 190 190 190	2-2 Ha 25	5
	Inch	0 16-5	Č,
l	Planished Oval Chafing Dishes, Low Covers	140 25	š
l	Each	9-2	5
Ì	Planished Low Dish Covers	20	•
l	Kach <td>de 25 j</td> <td>í</td>	de 25 j	í
l	THE PARTY OF THE WOOD TON 2 12 9 45 4 60 2 4	6.8	0
l	Planished Etnas, on Stands.	1.7	
١	Planished Liquor Mixersd	is 25 %	ŝ
	Per doz	245	
	Fer dos.	9 25 8	6
	Planished Oval Tumbler Warmersd	1-85 is 25 s	6
	Planished Oval O. G. Urnsd	10 25 S	į
	Nos \$4-90 5-45 6-80 7-00 7-75 9-25 11-25 12-50	15-50)
	Nos 0 1 4 5 6 6	7	6
	Each. \$420 488 548 630 778 900 1170 Planished Round Oyster Dishes, (Complete). d. Nos. \$210 Planished Oyster Dish Plates. d. Nos. d. Each. \$972	14 25 %	
	Rach	2.00	
	Nos	8 25 ×	•
-	Each	0.30 a 25 %	
1	Nos	0.85	
	Tea Pot Handles-P. S. & W	a 20 %	
	Tea Pot Handles—P. S. & W. di Stow's Patent Hollow Tea Pot Handles. No. 1, Small 44; inchesper gross, 1 No. 2, Medium, 54; No. 3, Large 64; In. for West Nicol.	12:50	
		13.50	
		18:00	
	Stow's Patent. New Pattern.		

y Banks Gothic.

April 2, 1874.	
No. 1. 5% inches long	TUBING.
No. 1, 8½ inches long	(Brown & Sharpe's Gauge.) Plain to No. 20, inclusive
No. 6, 9 " 5.75 Japanned per lb., 16 Tinned "	Plain to No. 20, inclusive
Iron Kettle Ears (P., S. & W.)dis 45 % Hulf gross pairs in a package.	All Mandrel-Drawn Tubes 5c, advance on List.
METALS.	All Mandrel-Drawn Tubes 5c, advance on List. Fancy Tubing 4c, advance on List above Plain. English, Scotch, and Extra Patterns Fancy Tubing to No. 30. Tubing sawed or cut 2 to 4 ft. long, 2c. advance on
IRON.—DUTY: Bars, 1 to 1½ cents per lb Sheet, Band, Hoop and Scroll, 1½ to 1½ cents per lb. Provided, that none of the above 1ron shall pay a less rate of duty than 50 per cent. Pig. \$7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, \$8 per ton: Cast Scrap, \$8 per ton: All subject to a reduction of 10 per cent. Railroad, 73 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.	List. Add to two cents a half-cent for each additional cut- ting under two feet. 10 % discount. Brass Door Rail—48 cents per lb.—10 % dis.
than 35 per cent. Pig. \$7 per ton; Polished Sneets, 5 cents per lb.; Wrought Scrap, \$8 per ton; Cast Scrap, \$6 per ton. All subject to a reduction of 10 per cent.	BELT AND HOSE COPPER RIVETS AND BURS. Price per 3
cents per lb. Pig Iron—AMERICAN. Foundry No. 1	GERMAN SILVER MARKET METAL AND WIRE. GERMAN SILVER MARKET METAL AND WIRE. Market Metal. Wire. 4 per cent. 12 inch. to No. 28
Foundry No. *	Brass Door Rail—46 cents per lb.—10 s dis. Bril and Boss Coppers Rivers and Burss. Price per 5
cents per lb. Fig Iron-AMERICAN. Foundry No. 1. \$70.00 Foundry No. 2. \$20.00 \$30.00 Gray Forge. \$20.00 \$30.00 White and Mottled. \$20.00 \$30.00 Cotness. 40.00 \$41.00 Glengarnock. \$9.00 \$40.00 Egilnton. \$7.00 \$30.00 Row Iron.	Discount 10 %. German Silver Sheet; ver 12 inches wide and weighing
Am. Reaned, at mill \$ 50 00 3 30	Advance two cents for each additional inch in width
Ratis Weish gold P ton, American, at works, currency 100	All German Silver thunner than No. 36 is Platers' at 5 cents per pound additional. German Silver Scran. one-third less than net price of 1:
Wrought Scrap, from yard 41 00 Bar Iron from Store. Common Iron.	inch Market Metal; German Silver Turnings, Filings and Chips, half the price of Scrap. Brown & Sharp's Gauge is about two numbers fine
Wrought Scrap. from yard	and two cents per pound on each No thinner than Nos. 36 to 36, inclusive. All German Silver thinner than No. 36 is Platers' at 50 cents per pound additional. German Silver Scrap, one-third less than net price of 15 the cerman Silver Scrap, one-third less than net price of 15 the cents of 15 the cent
1½ to 6 in wide x ½ & 5-16 in. thick	valorem. All subject to a reduction of 10 per cent. American Ingot
1% x% to %, and % square	Braziers Copper, ordinary sizes, over 16 oz., per 35c & n square foot. Braziers' Copper, ordinary sizes, 16 oz. and over
6 to 8x% and %	12 oz., per square foot. Braziers Copper, 12 oz. per square foot and lighter-sic. Circles less than 54 inch in diameter
Refused from	Circles less than 94 inch in diameter
2½ to 2½, round and square	Boft copper
7-16,	14x48, by the case
5-16, " 95 00 100 00 5-16, " 127 50	14x48, by the case
11 90 ED	Coppessortoms, 34 @ SC. W B
1 x %, to %	12 oz. and lighter
10 t	O'NEILL'S PATENT PLANISHED COPPER. 14 and 16 oz. and heavier
Bost Norway B & Sk @ Sr	12 oz. LEAD—DUTT: Fig. \$2 per 100 lbs.; old Lead, 15 cent per lb. Fipe and sheet, 2x cents per lb. Ali subject to
Sorvery Shapes \$\fo\$\tau\tau\tau\tau\tau\tau\tau\tau\tau\tau	# reduction of 10 per cent.
	Bar
1 to 4 in, wide '%c Tire Steel 8 /	Shot
Cloleb Chon Stent	at 7 cents per 10., or under, 25 cents; over 7 cents, and not above 11. 5 cents per 1b.; over 11. 34 cents per 1b. and 10 % ad val. Railway Bars 14 cents per 1b. Rail- way Bars, in part Steel, I cent per 1b. All subject to a
Hoops, x No. 22	is and 16 oz. and heavier
Piów Steel 8 % c	Tool 16c Spring 12/5c
127 50 127 50 127 50 127 50 128 50 131 121 132 50	Tire
" 5 x 10 " 117 50 " 115 00 " 112 50 " 1	Saw Plate, mill and mulay 14 € 16 ½ c Saw Plate, gang and X cut .18 € 14 c " circular as to size .18 € 30 c
112 50 110 00 110 00 110 00 110 00	Tooi
% x 12. " 110 00 " 34 x 12. " 107 30 " 34 x 10. " 107 30 " 37 x 3-16. " 106 00	Machinery 9 14c. Hammer 15c, Gun or Homogeneous 16c
" 102 50 " 120 00 Sheet Iron.	Best Cast
Sheet Iron. 130 00	Blister, 1st quality 11%c
25 to 36	German Steel, Best 113c do 2d quality 194c Sheet Cast Steel, 1st quality 18c
21 to 24	2d quality 16c 3d quality 14c File Steel, Flat and ⅓ Round 12⅓c
Patent Pollahed	" Mill. " 13/c " Taper to 4 inch " 17c " Taper 3 and 3/c inch " 18c
Stained, No. 1	SPELTER-DUTY: In Pigs, Bars and Plates, \$1 50 per 100 lbs.—less 10 per cent. Silesian, cash
One paece Corrugated Sheet Iron Elbows. GLABCOAL HON 7 inch. 5 5 525 525 630 per doz. EUSSIA IRON.	TIN-DUTY: Plates, Sneets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per B; Manufactures of, not enumerated, 35 per cent. ad val.
4½ 5 5½ 6 7 inch. 18°00 10°00 18°00 13°00 14°00 per doz. Adjustable Stove Pipe Elbows.	and Pigs, free. Banca, subject to duty of 10 per cent. Banca. ** b 28 % @ 39c. gold Straits. ** b 37c gold
CHARCOAL TRON. 4 4½ 5 5½ 6 7 inch. 325 873 425 475 525 6 5 per doz.	CHABOOAL TIN PLATE. 1 C-10x14. Prime Charcoal
40 4% 5 55% 6 7 inch. 1700 800 950 1075 1175 1875 per doz. 01sccount on orders of 10 doz. 5 5.	14x8), " 12°75 1 X 10x14, " 14°25 12x12, " 14°25 14x20, " 14°75
Discount on orders of 10 doz. 5 %. 25 doz. 10 %. Brass.	D C 12½x17 " 11:50 D X 12½x17 " 15:75 For each additional X add. 225
EOLLED AND IN SHEETS. (Brown & Sharp's Gauge.") For the purchase of 100 pounds and over at one time	way Hars, in part Steel, I cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, Cast or made from Iron by the Messemer or pneumatic process, of whatever form or description, shall be classed as Steel. Tool. American Cast Steel. Tool. American Cast Steel. Tool. American Cast Steel. 14% Choungeneous 12% Choungeneous 13% Choungeneous 13% Choungeneous 13% Chromate Steel. Tool. extra fine 15% Choungeneous 15% C
HIGH BRASS. All Nos. to No. 23, and widths 14 in. and under	10 11x20
Technic Control of the Control of th	I X (4x20, 1870) I C 20x28 23·50 21·25 @ 23·00 18·75 @ 21·25 I X 20x28 23·25 27·25
heets 24x48 in., and all sheets cut to particular sizes and lengths. 40c	ZINC.—DUTY: Pig or Block, \$1 50 per 100 lbs. Sheet, 2\(\chi_c\), \(\pi\) b. All subject to a reduction of 10 per cent. Sheet
40 in. and over	•open 9½¢
HIGH BRASS. All Nos. to No. 23, and widths 14 in. and under	Paper Stock, Old Metals, &c.
	Canvas linen (Dealers' Selling Prices,)
oliding Metals, ic * b more than High Brass. laters' or Gold Metal In Bars	Canvas linen 6 6 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
idding Metals, fc * b more than High Brass	Colored. Soft woolens.
in. and less to No. 30, 3c \$\psi\$ advance. in. and less thinner than No. 30, 5c \$\psi\$ advance. 10 \$\psi\$ discount. SCRAP—NEW METAL.	Gunny bagging. 11 62 Jute Butts. 21 62 Kentucky bagging. 51 65 55
ilgh Brass Scrap, 17 cents, net.	Waste paper and scraps. 1% 68 Rope cuttings. 1% 68 Kentucky Baie rope. 18 68
Turnings, Filings and Chips, half the price of Scrap et. BEASS AND COPPER WIRE. (Stub's Wire Gauge).	No.2 5% 5% Grass rope. 9% 44 Tarred Shaking. 9% 44
(Stub's wire Gauge). Gild'g and High Brass. Low Brass. Cop'r 47 48 48	white Collar Cuttings, all paper. "Envelope "Hard White Shavings, No. 1.
106. 0 to 30	Soft No. 1. White Shavings, No. 2. 51/46 Mixed Shavings, part white. 4 1/4
FINE WIRE-MET PRIORS. Glid'g and High Brase. Low Brass. Cop'r	Book Stock, Mixed No. 2, light.
FINEWISE—METPELICES. Gld'g and High Brass. Low Brass. Cop'r 0-25. 0-41 0-45 0-51 0-27. 0-44 0-48 0-54 0-28. 0-46 0-50 0-35 0-29. 0-42 0-52 0-38 0-30. 0-50 0-54	Prints 22 Pure Manilas 22 Rogus Manilas and Hardwares 22 Commons 23
0. 00	Canvas linen
0. 47. 0.44 0.48 0.54 0.26 0.26 0.28 0.26 0.29 0.26 0.29 0.28 0.29 0.28 0.29 0.28 0.29 0.29 0.29 0.29 0.29 0.29 0.29 0.29	Heavy Composition 19 20
Ten cents per pound extra for Spooling.	Old lead, solid

	Wrought Iron			1%	@ 1%
v.)	Sheet Iron. Cast iron. Machinery Iron. Zinc. Pewter, No. 1. No. 2. Spelter			0%	8 1%
9 B	Zinc			114	@ 1% 6 24
ch No.	No. 2.			10	@ 12
	sherrer	******			•
1 36	Paints, O	ils,	etc		
n List. e Plain.	-	_ ′			
ncy Tubing to	Black, lamp-Coach Painters.	is.		······ 9	D 30c
. sdvance on	" lvory Drop, fair				tic
dditional cut-	Black Paint, in oil	kegs, 8	C.; asst	'd cans	, 11 c
0 % dis.	th Chinese day	ofl		ან	@ 75c
58 60 64 68c 12 13 14 15	Ultamarine			25	@ 30c
scount 10 g. AND WIRE. rket Metal. Wire	Van Dyke				90
0'75 0'90 0'85 1'00	Green, Chrome			15	@ 236
1'05 1'25	Paris		.good,	Suc; be	st, 40c
1*45 1*75	Mineral Paints			13	4 @ 4c
ide and weighing	Red Load, American English				9%c
al inch in width	" Venetian (N. C.) dry	.uset'd	cans, 1	ic: keg	
und on each No.	Rose Pink				10c
36 is Platers' at 50	Burnt				4c
an net price of 12 rings, Filings and	Raw "			16	@ 26c @ 25c
ro numbers finer	in oil			16	@ 8c @ 21c
, 5c.; old copper, ag ali articles of ef value) 45 % ad of 10 per cent. P B 36 @ 26%c	Vermillon Chinese			16	@ 22c
ef value) 45 % ad	" English				1 75
P 3 26 @ 26 %c	White Lead, American, Commo	on			230
BOLTS, &C.	White, Paris, English, prime.	D oil	(n b)	nla. 21/2	.11%0
	Yellow Ochre French	annt'd	cans. I	10: kee	@ 3 Kc
and over	Black, lamp—Coach Painters, " Ordinary." " In oll Blue, Prussian, fair to best. " In oll." " Ultamarine. Brown, Spanish. " Van Dyke. Carmine, 40. " Ordinary." " Paris." " In oll. " Paris." " In oll. " In oll. " Venetian (N. C.) dry." " English." " Burot. " Trieste. " Trieste. " American, Comine White Lend, American, pure of " American, Comine White Lend, American, pure of " Trieste. " Trieste. " Trieste. " American, Comine White Lend, American, pure of " Trieste. " Trieste. " Trieste. " Trieste. " American, Comine White, Paris, English, prime. " In oll. " Chrome " In oll. " Chrome " In oll. " Chrome " In oll. " Zinc White, American N. 1 di			in cask	# 1%c
	Chrome in oil Zinc White, American No. 1 dr	ry		18	@ 28c
35c. **	1.11	n call			110
ghter 4lc. "	oils				.12
uches, and not to	Linseed Raw	F gal. c	nsks,	1.02 "	#1.9dc. #1.0S
	" Bleached Winter				
8c. ₩ sheet 10c.	Winter unbleached				1.70
10C.	Seal, Extra Refined				1.70
35c. \$ aq.	Spring				358
COPPER,	"French (Paris)." In oil "Bolled Raw Olis Bolled "Bolled "Bleached Winter "Winter unbleached "Winter unbleached "Bleached "Bleac			4636c G	4736c
he case, 38c. P m	Nestsfoot, Winter			70c G	\$1.10 (2) 40c
	AsphaltumSundri	ies.			90
, 14x10 he case, 40c. ¥ % s wide.)	Benzine			₽ €	al. 16c
	Dryer, Patent, Am'n	l'sea.	cans, it	56c.; ke	eses 9e
old Lead, 1% cent b. All subject to	Flocks English		11	c.;	90
b. All subject to	Glue, White			88	@ 47c
	Succe			•••••	9c
SK @ SKe gold	Glaziere Points, Zinc				35c
6% @ 6%c gold 6% @ 6%c gold @ 7%c gold 9%c.	Glazi rs Points, Zinc				
6% @ 6%c gold 6% @ 6%c gold @ 7%c gold 	Gigglers' Points, Zinc. Gum, Copal. Damar Shellac, English dark.				56c
6% @ 6%c gold 6% @ 6%c gold @ 7%c gold 	senzine chalk "Block Dryer, Patent, Am'n Flocks Frostings Glue, White "Sheet Glazit or Points, Zinc Gun, Copai Dunar Dunar Litnarge Famice Stone, selected Lumps powdered		******		56c 10c 1 @ 6c
6% @ 6%c gold 6% @ 6%c gold @ 7%c gold 	Glark re Points, Zinc Gum, Copal. Damar Damar Shellac, English Litnarge. Funice Stone, selected Lumpa Putty in bladders to bulk.				56c 10c 4 @ 6c 4c 35c
6% @ 6%c gold 6% @ 6%c gold @ 7%c gold 	Putty in bladders. in bulk. Rotton Stone, soft, English.				4c 36c
6% @ 6%c gold 6% @ 6%c gold @ 7%c gold 	Putty in bladders to bulk Rotton Stone, soft, English Spirits Turpentine Whizing, Spanish				4c 3c 8c 8c
6% @ 6%c gold 6% @ 6%c gold @ 7%c gold 	Putty in bladders to bulk Rotton Stone, soft, English Spirits Turpentine Whizing, Spanish				4c 3c 8c 8c
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6% C.6% C.6% C.6% C.6% C.6% C.6% C.6% C	Putty in bladders. in bulk. Rotton Stone, soft, English. Spirits Turpentine. Whiting, Spanish. Ginas French Windote—1st, 2d, 8a box of 50 feet.	, and			4c 3c 8c 8c
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. in bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. in bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. in bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. In bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. In bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. In bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. In bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. In bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold .6% @ 6%c gold .6% C gold .6%	Putty in bladders. In bulk. Rotton Stone, soft, English. Spirite Turpentine. Whiting, Spanish. French Window-1st, 2d, 3d box of 50 feet. SINGLE	, and	eth qu	alities.	4c 36c 36 8c 48o 11
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold	Puty in bladders.	88'00 8'30 8'30 9'30 11'75 14'25 15'30 16'25 17'25 20'50 22'50 23'00 26'50	#7:00 8:00 8:00 9:00 10:50 9:00 12:25 13:50 14:25 14:75 17:70 19:25 21:50 21:25	#6-75 7-25 8-00 8-50 10-00 11-00 12-50 11-25 14-25 14-25 14-25 20-25 23-00	Per IV. \$600 6:56 6:75 7:75 8:956
.6% @ 6%c gold 6% @ 6%c gold 6% @ 6%c gold 6% % e gold 6% e gold 6% % e gold 6	Puty in bladders.	1.	#th qui #7-00 8-00 9-00 9-00 113-50 1	alities. 111. \$6-75 7-25 8-90 8-90 12-90 12-90 12-90 12-90 13-25 15-30 20-23 20-23 111. \$11-90 \$1-925 20-90 21-	1V. H0000 10175 12500
.6% @ 6%c gold 6% @ 6%c gold 6% @ 6%c gold 6% % e gold 6% e gold 6% % e gold 6	Puty in bladders.	1.	#th qui #7-00 8-00 9-00 9-00 113-50 1	alities. 111. \$6-75 7-25 8-90 8-90 12-90 12-90 12-90 12-90 13-25 15-30 20-23 20-23 111. \$11-90 \$1-925 20-90 21-	1V. H0000 10175 12500

A. C. Downing & Comp'y,

Importers of and Dealers in

Window Glass,

And Car Glass, etc.

57 Beekman & 87 Ann Sts, NEW YORK.

H. CARTER,



Manufacturers of and Dealers in all descriptions of Moulders' and Plasterers' Tools, and Dealers in General Hardware, Gilded Copper Weather Vanes, CARTERS' PATENT CARRIAGE LIFTING JACK, &c.

Wardware.

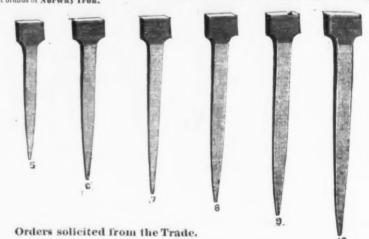
PRATT & CO.,

Hardware & Iron Merchants, Buffalo, N. Y.

Manufacturers of the Superior Brand,

BUFFALO FORGED HORSE NAILS.

These Nails are superior, being made with new and improved machinery and actually hammered from the brands of Norway Iron.



GEORGE B. WALBRIDGE,

99 Chambers Street, New York,

Represents:

PRATT & CO., Nuts, Washers, Crow Bars, Horse Nails, &c.
SHELTON CO., Tacks, Brads, Carriage, Tire & Stove Bolts, &c.
SYRACUSE BOLT WORKS, Norway Iron, Phila. Carriage Bolts.
WOOLWORTH HANDLE WORKS, Axe, Pick & Sledge Handles, &c
NATIONAL HORSE NAIL CO., Polished & Finished Horse Nails.
SIDNEY SHEPARD & CO., French, Stamped & Japanned Tinware
D. H. GOODELL, Lightning & Turn Table Apple Parers, &c.
ELEPHANT EDGE TOOLS, Axes, Hatchets & Tools.
H. F. MILLER, Hatchets and Edge Tools.
W. F. H. AMWAKE, Scandinavian Pad Locks.
CHALLENGE August and Bits, Union Balts, and Spake Shaves.

CHALLENGE Augers and Bits, Union Bolts, and Spoke Shaves.

DERBY SILVER CO., Fine Plated Spoons, Forks and Ladles.

All goods sold at Manufacturers' lowest prices, and delivered from stock or shipped direct from Factory, as agreed.



ICE CREAM FREEZERS.

These Freezers have been in use since 1860, with the most flattering results, and they have well arred the reputation of being the BEST ICLS CREAM FREEZER ever introduced. A large number of Testimonials might be offered in recommendation, but the fact that they are now sold by the adding houses in all the principal cities in this country, and also numbers of them are exported every rear, is a sufficient guarantee of their excellence. They are made in the most durable and substantial namer, none but the best materials are used in their construction, and the mechanical arrangements are ach that they will freeze Cream, Fruits, or Water Ices, in the shortest possible time.

 DOUBLE ACTION FREEZER.
 COG WHEEL FREEZER.

 SIZES AND PRICES.

 0 quarts.
 \$15 00
 2 quarts.
 \$9 0

 5 " \$20 00 - With Fly Wheel
 \$5 00
 \$ " \$3 00
 \$ 0 0

 5 " with Fly Wheel
 \$ 00
 \$ " \$5 00
 \$ 0 0

 5 " with Fly Wheel
 \$ 00
 \$ " \$ 5 00
 \$ 0 0

 5 " with Fly Wheel
 \$ 00
 \$ " \$ 00
 \$ 0 0

 For sale in New York at minimum rates by Wholesale Dealers in House Furnishing Goods generally.
 CHARLES W. PACKER, Manufacturer, Philad clphia.

SIDNEY SHEPARD & CO.,

THE BUFFALO STAMPING WORKS





MANUFACTURERS OF

FRENCH WARE, STAMPED AND JAPANNED TIN WARE,

Tollet Ware, Tin Toys, Coal Hods, Coal Vases, Stove Boards, Ice Cream Freezers, Transportation Cana Perforated Sheet Metals, Grocers and Spice Dealers Tin Ware, also a large line of Miscellaneous House Furnishing Articles.

GEORGE B. WALBRIDGE. Agent, 99 Chambers Street, New York.

Metallurgical.

MAYNARD & VAN RENSSELAER.

CONSULTING

Mining and Metallurgical

ENGINEERS,

xperts in Iron and Analytical Chemists. 24 Cliff Street, NEW YORK, George W Maynard. Schuyler Van Rensselad. THOMAS M. DROWN, Analytical Chemist

And Consulting Metallurgist,

1123 Girard Street. Philadelphia.

Analysis of Irons, Streets, Alloys, Ores, Coals
Smelting Products, etc. Iron and coal lands examined, surveyed and valued.

The Iron-Masters' aboratory.

Pig and Manufactured Iron, Steels, Limestone. Clays, Slags & Coal for Practical Metallurgical Purposes.

No. 339 Walnut Street, Philadelphia. J. BLODGET BRITTON.

This Laboratory was established in 1866, at the instance of a number of practical fron-masters, expressly to afford prompt and reliable information upon the chemical com sition of the substances above mentioned, for smelting and refining purposes. The object being to make it at nee a convenient, practically useful, and comparatively nexpensive adjunct to the Furnace, Forge and Rolling

CHARGES TO IRON WORKS.

- For determining the per cent. of pure Iron in an For the per cent. of Pure Iron, Sulphur and Phos-phorus in do... For each additional constituent of usual occur-. 1 50
- termine, the charge must necessarily depend upon circumstances.
- For the percent, of Carbonate of Lime, and In-

SCHOOL OF MINES, COLUMBIA COLLEGE,

East 49th Street,

FACULTY:

P. BARNARD, S. T. D., LL. D., President.

RESTON, Ju., E. M., Mineralogy and Metallurgy

CISL. VINTON, E. M., Mining Engineer.

CHANDLER, Ph. D., Analytical and Applied

DR. C. F. CHANDLER, Dean of the Faculty Patented Steam and Hydraulic, April 1, 1868



Of various sizes for ENGINES and PUMPS, manufactured by JAMES GLANDING & CO., No. 115 Queen St., Philadelphia. What the proprietors eisum for the Eagle Packing: 1. Its general adaptation to all purposes for which packing is used 2. Its durability. It will outlast any other article in use. 3. Its cheapness. It can be furnished to the consumer at a lower rate than any other packing.



Finished in White Enamel. Illustrated Catalogue sen-ee. Address, Millier Iron Co., Providence, R. I. Janufacturers of Ornamental IRON Work for Gar-eus. Lawns, Cemeteries, &c. For sale by B. K. Bliss, &

James S. Patterson, Designer & Engraver

on Wood. 21 Spruce Street, NEW YORK.



Bemis & Call Hardware & Tool Co.'s JOHN WILSON'S CELEBRATED

hroughout. And not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but diso all requisite Combinations of a regular Nut Wrench. Thus making a Combination which has no equal. For Circulars and Price List, Address,

BEMIS & CALL HARDWARE & TOOL CO. Springfield Mass.



HARDWARE SPECIALTIES.

Shutter, Picture and Drawer Knobs.

Plate and Drop Escutcheons. Picture Nails and Cur-

tain Pins. Bright Wire Goods.

Bright Halterand Coll Chains. French Wire Nails. Wrought Iron & Brase

Butts.





ber of the firm of L. & A. G. Coes, established in 1839, is the Original Inventor of the Screw Wrenc'i, and has, by making the bar vider, where the strain comes most severe, and screwing a nut up firmly against iour squars shoulders inside the ferrule, thereby effectually preventing the ferrule from being thrust back into the handle or getting loose, and making a larger screw than in the old wrench, fully succeeded in making a 12 inch wrench stronger than a 15 inch made in the usual manner. All sizes are made in this way, and are undoubtedly the strongest and best finished Screw Wrenches in the market.

There at Imitations of our goods offered for sale, that, without question, miringe on our Patents.

We hold Patents bearing date Nov. 10th,

1863 (re-issued June 1st, 1869). June 26th 1866, March 23d, 1869 (re-issued April 19th, 1870, and May 14th, 1872), which fully cover all our im-provements. One of the above cuts represents a sectional view, showing the nut under the ferrule, and the strengthened bar, that part being covered by the aw, as seen in the cut of wrench complete. None genuine unless

"L. COES & CO" Warehouse, 97 Chambers and 81 Reade Streets, New York. HORACE DURRIE & CO., Agent,

NEW ENGLAND AGENTS. HOGAN, CLARKE & SLEEPER.



"Diamond" PLANE IRONS, finish. Solid Steel Caps and Warranted. PATENT FORGED OX de with concavity to fit hoof, and the fest and cheapest. BENGH AND every description. Also, Plow and Match Bits, Moulding and Rabbet Iroas, Plane ops, Cuts, Starts, Plates, &c., &c. Drop Forgings to order. Address for Catalogue and Prices

Greenfield, Mass,
Warehouses: New York, 37 Chambers st., Hoston, 22 Chiver st., E.F. Reduced Prices for 1874.

SMITH, BURNS & CO.,

Galvanized and Japanned Sheet Iron Goods, and all kinds of Stamped, Pieced, Japanned and Galvanized

> WARE. TIN



Oval, Square and Round Wash Bollers, Tea Kettles, Coffee Pots, Fluted, Octagon, Oval and Round Tea and Coffee Pots.

Japanued and Galvanized Chamber Pails, Water Pails Well Buckets, Ash Cans, EXCELSIOR Fry Pans, Broilers, &c. Toilet Ware, Water Coolers, Watering Pots, Plunge Infant, Hip, Sponge and Foot Baths.

Patent Corrugated Riveted Bottom

COAL HODS Warehouse, 46 Cilf Street, between Beekman and Falton Streets, NEW YORK, New Catalogue now ready.

BUTCHERS' KNIVES, BUTCHERS' STEELS. SHOE KNIVES.

THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

JOHN WILSON.

BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY. GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

Works:-SYCAMORE STREET, SHEFFIELD, ESTABLISHED in the Year 1750.

Anvils, Chains, Pocket Cutlery Guns, Files,

BIRMINGHAM, SHEFFIELD & GERMAN HARDWARE, Wostenholm's IXL Pocket Knives & Razers, Butcher's Files, Tools, &c. No. 54 Cliff Street, NEW YORK.

Wilhite Lead, St.

John T. Lewis & Bros... No. 231 South Front St., PHILADELPHIA.



PURE WHITE LEAD, RED LEAD, Litharge, Orange Mineral, Linseed Oil



The Atlantic White Lead and Linseed Oil Company,

White Lead (Atlantic), Red Lead Litharge & Linseed Oil.
ROBERT COLCATE & CO.,
287 PearlStreet, New York.

Established 1782.

WETHERILL & BRO.,

White Lead, Red Lead, Litharge & Orange Mineral. OFFICES, 31st. ST. BELOW CHESTNUT, PHILADELPHIA.

Brooklyn White Lead Co. JOHN JEWETT & SONS



TRADE MARK White Lead, Red Lead and Litharge. 89 Maiden Lane, NEW YORK. FISHER HOWE, Treas.



Machinist's Vise Manufactured by

Harrisburg Foundry and Machine Company. Harrisburg, 1

and for Circular a

JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.



struction of this chuck Its working parts are
absolutely protected from dirt
and chips. It is
strong, compact and
durable, and will hold the greatest variety of work, as the jaws

Lambertville Iron Works, Lambertville, N.

WHITE LEAD.



LINSEED OIL AND FLOOR OIL CLOTHS. 182 Front Street NEW YOHK



PATENTAIMPROVED STEAM TRAP

A. L. JONES, leating Establishment, 150 S. 4th Street, Phila.

WILLIAMS WHITE & CHURCHILL,

MACKRELL & RICHARDSON MFG. COMPANY, Builders' Hardware,

Locks, Hinges, Hooks and Staples, Awning Hooks, Meat Hooks, Pincers, Champion Noiseless Pulleys,

CHAIN PULLEYS, &c. Factory, cor. Flushing and Nostrand Avenues BROOKLYN.

Warehouse, 73 Warren St., N. Y.

Wardware.

ESTABLISHED 1836.

ALFRED FIELD & CO., Foreign Hardware Commission Merchants

IMPORTERS AND EXPORTERS.

Birmingham, Sheffield and Liverpool, England; New York, Philadelphia, Cincinnati and New Orleans, U. S.; Montreal, Canada.

In addition to our Commission business, and to meet the wants of the Wholesale Trade only, we are carrying in stock at 47 John and 5 Dutch Sts., N. Y., and 75 Gravier St., New Orleans, leading goods in our line, such as,

Anvils, Chains, Vises, John Wilson's Goods, Chesterman's and other Tapes, Brades London Trowels, Grass Hooks, Guns, Padlocks, Curry Combs, Pocket and Table Cutlery, Screws, Galvanized Twisted Clothes Lines, Eley's Caps, Wads and Cartridge Cases and a large line of Miscellaneous Goods.

HILGER & SONS,
87 Chambers and 69 Reade Streets, NEW YORK.

German Hardware, Cutlery, Scissors, Coffin Lace, Sheep Shears, Ball Braces, Bright Halter and Coil Chains, &c.

Also, Birmingham and Sheffield Hardware and Chains, Butcher's Files, Edge Tools & Razors, Wostenholm's Razors & Farriers' Knives, John Wilson's Butche Knives and Steels, Stub's Tapers, Chesterman's Metallic Tapes, Isaac Greave's Hedge Shears, James Bees & Parkin's Spoke Shaves, Turn Screws and Braces, Pad Locks, Goulcher's Gun Locks, Brades Trowels, &c.

NEW YORK, 101 and 103 Duane and 91 and 93 Thomas Streets.

REMSCHEID and SOLINGEN (Prussia.) H. Boker & Co.

SHEFFIELD (England), No. 3 Arundal Lane, Represented by Mr. ABTHUR LEZ. LIEGE (Belgium), Represented by Mr. Louis Muller.

Manufacturers and Importers of Cutlery, Guns, Hardware and Railroad Material.

Proprietors of TRENTON VISE AND TOOL WORKS, Trenton, N. J.—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.

Proprietors of the MANHATTAN CUTLERY CO., "O. K." Razors.

Proprietors of the MANNANTAN CUTLERY CO., "O. R. "Razors.
Sole Agents for LANSON & GOODNOW MFG. CO., Shelburne Falls, Mass.—Table Cutlery and Butcher Knives.

W. & S. Butcher's Files, Edge Fools and Razors, the largest stock in the United States.
Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.
John Wilson's Butcher and Shoe Knives.

Peter Wright's and Armitage Anvils.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

SPEAR & JACKSON,

Sheffield, England,

Saws, Files, Edge Tools and Steel. JOHN L. FISHER. Agent,

116 Duane Street, NEW YORK.

ROY & COMPANY.

West Troy, N. Y.,

Wrought Iron Butts, Strap and T Hinges,

Cold Pressed Nuts and Washers, Felloe Clips, &c. JOHN L. FISHER, Agent, 116 Duane Street, New York.

STANLEY WORKS.

Wrought Butts, Strap and T Hinges. Bronzed Butts and Bolts.

Wrought Barrel, Square and Shutter Bolts. Wrought Chest Handles, Washers, Flush Bolts, &c.

79 CHAMBERS ST., NEW YORK. Factory at New Britain, CONNECTICUT.

CROOKE & CO.,

WROUGHT IRON

All our goods are manufactured from patent faced iron plates; they have a smooth face and bright finish. 163 & 165 Mulberry Street, New York.

MANY & MARSHALL,

BUILDERS' HARDWARE,

48 WARREN STREET, NEW YORK.

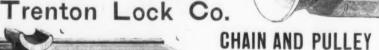
MORTISE & RIM LOCKS OF EVERY DESCRIPTION.

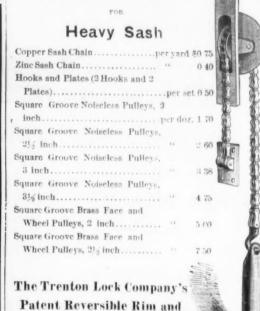
Hand Plated and Pure Bronze Metal Butts, Knobs, Escutcheons, Bell Pulls, Etc.

Butts, Flaps and Knobs for Inside Blinds, Plated and Bronze Sash Lifts,

And all Articles necessary for first-class Residences and Public

AGENCY AND DEPOT OF THE





Mortise Locks. The attention of Owners, Architects and Builders is re

quested to the construction of these Locks, which are ex celled by none, either in simplicity strength or durability. The combination of the Patent Lever and Spring renders

the movement of the Latch the easiest and quickest in use. The tails of the Bolts and Latches, being of corrugated wrought iron, are stronger than those made in any other manner. The general finish of the goods is fully equal to the

UNION NUT CO., New York, PYROMETERS

TRENTON LOCK CO.

78 Beekman Street,

Agents for

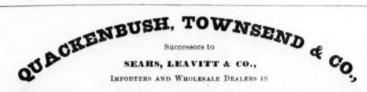
HART'S PATENT SAW SET.



Then trial will be found to be the most powerful and simple Saw Set ever offered to the public. Care has been taken to make the parts of the best material, and of proper proportions to give the greatest strength. It is made of the best Malleable Iron, except the Set Lever, which is of the best Cart Steel, and properly tempered.

DIRECTIONS FOR USING.

Adjust the Brass Gauge to the tooth to be set; then adjust the top gauge by means of the screw on the top until the gauge rests solidly on the saw blade. It will be readily seen that more or less Set can be given to the Saw by turning the set screw on top up or down.



Hardware, Cutlery,

59 and 61 Reade Street, New York.

THOMAS JOWITT & SONS (Sheffield, England,) Celebrated FILES AND HORSE RASPS. Rough and Ready and CLIPPER SCYTHES,

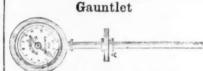


"BEAVER" (American,) FILES AND HORSE RASPS.

" WIDE AWAKE" AXES.

for BLAST FURNACES.

E. BROWN'S STANDARD PORTABLE, E. Brown's Improved



Edw. BROWN.

311 Walnut St., Philadelphia.

ALSO FOR SALE

PYROMETERS

For Baker's Ovens, Boiler Flues, Galvanizing Baths, Oil Stills, Vulcanizers, Superheated Steam.

E. Brown's Portable Blast Gauge for the plug hole, Steam Gauges, Blast Gauges, Mercury Gauges, Recording Steam Gauges, Engine Counters, Indicators for ascertaining the Horse Power.



Over 200 Gauntlets and 60 Portable Pyrometers are now in use at Blast Furnaces.

Circulars on application.



WHEELING HINGE CO.,

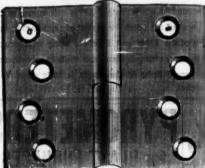
Wheeling, West Va.,

Wrought Butts, Strap & T Hinges, Wrought Hooks, Hasps & Staples, Wrought Repair Sinks & Washers,

GRAHAM & HAINES, Sole Agents, 88 Chambers Street, N. Y.

AMERICAN BUTT

Cast Butt Hinges



BUILDE'S'

HARDU ARE.

New York Warchouse with

Messrs. GRAHAM & HAINES,

No. 88 Chambers Street.

Al kinds of

SMALL CASTINGS

Headquarters for

Henry Disston & Sons' Saws,

Hand, Mill, Circular and Cross Cut.

Plumbs and Levels, Try Squares, Gauges, Trowels and Barker's Reversible Butt.

A full assortment constantly on hand. Address orders to

GRAHAM & HAINES, 88 Chambers Street, N. Y.



CENTENNIA SELF-LUBRICATIVE

Hemp Piston Packing

Locomotives, Steamships, Stationary Engines, Hot or Cold Water Pumps.

Recommended by Master Mechanics and Engineers, as the cheapest and best in market. No more Exteriornte Prices. No more Fluted Rods—but a good article at

JOHN CANFIELD & CO., SOLE MANUFACTURERS.

Office, 1321 Fairmount Ave., Phila. Send for Circular.

BAEDER, ADAMSON & CO.,

Sand and Emery Paper and Emery Cloth

GROUND EMERY, CORUNDUM AND FLINT, Glue & Curled Hair, Cow Hide Whips. STORES:

PHILADELPHIA, 730 Market St., NEW YORK, 67 Beekman St., OMETOAGO, 188 Lake SI;

BOSTON, 143 MIIIK St., CINCINNATI, 92 Main St.,

Tol Euron

SOUTHERN AGENCY

CHESAPEAKE CUT NAILS AND SPIKES. MALLORY, WHEELER & CO.'S LOCKS, KNOBS, &c.

American Screw Co.'s Screws. AMERICAN BUTT CO.'S Cast Butt Hinges.

PLYMOUTH TACK CO.'S Tacks and Rivets. ROBERT MANNS' Axes.

WOOLWORTH'S Axe Handles.
BEST NORWAY NAIL RODS, Newton Brands.

M. Rowland & Co.'s Shovels and Spades. ALSO, HEADQUARTERS FOR

O. AMES & SON'S SHOVELS AND SPADES. HENRY DISSTON'S SAWS, HAND, CROSS-CUT, MILL, &c. sheble & fisher's forks.

HARPER'S Hoes and Rakes. MOSS & GAMBLE'S Files.

KEITH & KELSO,

Hardware Commission Merchants, BALTIMORE, MD. Nos. 23 and 25 South Charles St.,

The Hart, Bliven &

18 & 20 Cliff Street, and 243 & 245 Pearl Street, New York. Factories at KENSINGTON, CONN.



Our Steelyards embrace the English, Collins', Farmers' and the Hart Pattern. All warranted correct. Our Improved Butchers' Cleavers are made of the best Cast Steel, with strong Norway Iron rules. Send for our Catalogue and Appendix. Price \$4.50, and charge remitted on receipt of subsections.

Improved Door Knobs.



Factory, SOUTH ABINGTON, MASS. Manufacturers of

Manufacturers of
American, Swedes and Copper Tacks, Tinned
Leathered and Large Head Tacks, Finishing Nai.e,
Black and Tinned Trunk Nails, Miners', Gimp, Lace
and Brush Tacks, Hungarian, Chair, Cigar Box and
Barrel Nails, Glaziers' Points, Iron, Steel, Copper,
Zinc and Brass Shoe Nails, HEEL and Tok
PLATES, STEEL, SHANKS, and
FANCY HEAD NAILS, SILVER or
JAPANNED LINING and SADDLE
NAILS.
A full assortment always on hand at salesrooms,
for immediate delivery if required.
Odd and irregular sizes made to order or cut from
sample at short notice. Send for Price List.

Plymouth, Mass.

Grundy & Kenworthy HARDWARE.

> 165 Greenwich Street. the Philadelphia Star Carriage and Tire Belts

SAMUEL LORING'S PLYMOUTH TACK AND RIVET WORKS
PLYMOUTH, MASS., manufacturer of
TACKS, BRADS, NAILS AND

TACKS, BRADS, NAILS AND
RIVETS.

Swedes and Common Iron Tacks; Leathered, Carpet
Brush, Lage and Gimp Tacks; Finishing, Hungarian, 2d.
2d and 3d Fine, Trunk, Clout, and Cigar Box Nails; Black
and Tinned Trunk Nails; Zinc, Iron, Copper and Steel
Shoe Nails; Brads and Fatent Bruds; Glazers* Points
&c. &c., &c., (10 PPER, BRASS AND IRON
RIVETS, of all kinds. Coopers Rivets, from Idto 6d,
in casks of 100 Ds. cack. Hose, Bulk Beads of extra
length, made to order. SHIP AND BOILER RIVETS
OF ALL SIZES AND LENGTHS

Established in 1810.

Dunbar, Hobart & Whidden,

Office and Salesroom.

116 Chambers Street, N. Y.

of Copper, Brass, and Iron Rivets; Comes Iron, Leathered, Carpet, Lave and Gharing, Hungarian, Trunk Clout and Cigas Rivets made to Or er.

NEW YORK AGENCY

AMERICAN TACK Co



Copper, Swedes, and Iron Tacks BRUSH, LACE AND GIMP TACKS, Leathered, Tinned, and Iron Carpet Tacks; Finishing, Black, and Tinned Trunk Nails Hungarian and Cigar Box Nails;

COPPER and IRON BOAT NAILS ZINC, COPPER, STEEL, and IRON SHOR NAILS 2d and 3d FINE NAILS; Bright and Tinned Roofing Nails.

BRADS, PATENT BRADS, doc,
Factory, Fairhave b. Mass.
Salesroom, 117 Chambers Stiset, NEW YORK
N. B.—Any variation from the logalar size of shap
of the above named goods cut from sample to order.

GEO. M. EDDY & CO.,



On the 10th January, 1865, we obtained Letters Patent for improved method of securing necks to Mineral and Porcelain Door Knobs, which improvement was used by us long enough to prove its utility, but on account of unsettled claim of joint ownership by former partner, its use was discontinued. Having now made a further improvement, for which we have made application for a Patent, we are now making the **BEST SECURED** and **MOST DURABLE** Mineual and Porcelain Door Knobs ever offered in this or We solicit orders for these Knobs at our regular prices for old styles, with

the understanding that if any can be loosened from or gotten off the necks without breaking the tops, they may be held by the purchaser subject to our order, with expenses added.

Nee The Iron Age, of August 21st., page 11, for reduced list prices on Locks and Latenes; also, for illustrated description of our patent Telescope Locks and Latches, with patent Flut Steel Perforated Keys.

BRANFORD LOCK WORKS.

Branford, Conn.

Or, THE HART, BLIVEN & MEAD MANUFACTURING CO., Agents, 18 & 20 Cliff and 2 13 & 245 Penri Streets, New Vorb

Easily Applied and not Liable to gat ant of Octor"

DOOR & GATE SPRING. JULY 11: 1871.

DOOR & GATE SPRING.

The Challenge Door Spring Co.,

CHALLENGE DOOR & GATE SPRING. JULY 11: 1871.



in Action the Most Graceful. In Use the Most Relia The Challenge Springs are manufactured from Steel Wire, tempored by an Improved dyncesse result of repeated experiments, and must not be classed by dealers with the numerous worthless "Coli Springs" de from common Bed Spring Wire.



The Wethersfield Novelty Co.

Builders' Hardware and Plated Goods.

PATENT DOOR-KNOB ROSETTE.

BRASS AND IRON FOUNDERS.

, Rosette. 2, Screw entering No. 3. 3, Stationary bushing remaining firmly Particular attention given to Light Manufacturing for

BRASS & IRON FOUNDING, SILVER & NICKEL PLATING. Orders Solicited.

Factory on the Valley R. R. at Wethersfield, Conn, Communication from Hartford (Amiles) by horse or steam sars,

April 2, 1874.	
PHILADELPHIA. (Corrected weekly by Lloyd, Supplee & Walton).	Spn Pla Br Ge
For 60 days, For 60 or 90 days, interest added at 10	Spr
Asvils.—Solid Cast Steel	Sto
Eagle	Try
Turn Table. " 8 50	Tac
Axes.—Mann's Light	Tra
Red Chieftain, all sizes	Vis
Twist Diss. dis 30&10 %	T
Red Indian, an sizes 12 50 € 13 60	P
Russell Jennings' Bits	WI
Watrous' Ship Augers. Bainness.—Landers Frary & Clark's. dis 15 % Chattillon's. dis 15 %	CT
Bells Bevin Bros. Mfg Co. Full Weight dis 50% 10 @ 60 %	
Hand Bells. dis 50&10 @ 60 % Bevin Rros. Mfg. Co., Extra Light Hand Rells. dis 60 @ 60&10 % Other makers light dis 60 & 60&10 %	
Bevin Rros. Mig. Co., Extra Light Hand Relis. dis 60 de 60 to 5 Other makers light. dis 60 de 60 to 5 Connell's Door Beits. dis 60 de 60 to 5 Great Western and Kentucky. Cow. dis 50 de 50 to 7 Borling Machiness.—Bates Mig. Co., complete With augers. dis 15 de 20 g Douglas' Mig. Co., complete with augers. dis 15 de 20 g Commun Borling Machines, no Augers. dis 15 de 20 g Anguar. 25 de 4 do Anguar. 25 de 4 do Western dis 70 to 60 to 70 t	
plete with augers. Douglas' Mfg. Co., complete with augers. dis 15 & 20 & Comman Buring Machines, no Augers	Au
Anguint. Boils.—Eastern Carriage Bolts	Bit
Wrought Snutter Bolts	Bel
Braces. — Barber s	Bra
Skelly's Phils. Norway Iron. Inish. points. dis SNess & Braces. Barber s. dis 40 s. dis 50 s.	Bra Bo Bu
Cast Loose Joint	(
" Table Hinges and Back Flapsdis 39 % Narrow	
Parker's Bling Butts	1
Cherritree Blind Butts for wood	Be
Carretson's dis 25&10	Be
# 5 13 \(\) 10 \(\) 10 \(\) 9 \(\) 9 \(\) 8 \(\) gold 8 \(\) 16 \(\) 3 \(\) 16 \(\) 3 \(\) 16 \(\) 3 \(\) 16 \(\) 3 \(\) 16 \(\) 3 \(\) 16 \(\) 3 \(\) 17 \(\) 16 \(\) 18 \(\)	Br
Chain, Me per lb. less than proof. ChiscisSocket Framing	
Tang Beatv's Framing and Firmer. dis 40 @ 40&10 s Cnsters.—Porcelain Wheel. dis 25&10	CI
Craters - Porcelain Wheel dis 256:10	Ci
Reliance "72 00 Providence "72 00 Order for 5 dozen, discount \$3 per dozen.	CI
King Wringers (Iron Frame)	F
Curiery — American Pocket (best)	H
Relance. "7: 00 Providence "7: 00 Orders for 5 dozen, discount \$5 per dozen, King Wringers (Iron Frame)	
Tinned. 9 doz. \$3.00 \$25 \$62 400 450 500 550 600 75 No. 0 1 2 3 4 5 6 7 8 Burnished.	H
P doz\$2.90 3.00 3.38 3.75 4.12 4.50 5.00 5.62 6.7 No 0 1 3 3 4 5 6 7 8	5
Files. Nicholson Mill Files. new list, \$5.00 to £ cur dis 10.	HH
Nicholson Mili Files . new hist, 85 00 to £ cur dis 10. Bastard 5 00 to £ cur dis 10. Taper 5 00 to £ cur dis 10. Butcher's Mill	H
Moss & Gamble-Mill, Taper and Bastard	n L
Bastard 5 50 ⊕ 5 25 to £ gol Flating Machines. Royat, No. 1, 4½ inch Rollers likt \$6 0 " No. 2. 6" " list 7 0 K. F. M.—4½ in. rolls 5 0 " —6 in. rolls 6 0 Hawmers.	0 0
Havamera Verkes & Plumb's dis 19 Hammond & Son's dis 5 Verce dis 5 Verce dis 5 Hatchela	K M
Verce & Hardward Half & doz\$7:00 7:50 7:75 8:0	N
Yerkes & Plumb	e B
Yerkes & Plumb. 3 dis 10 Shingling and Haif. (No	5 P
" No. 2 and 3	4 0
Ausable	28 F
Putnam \$2 28 26 25 24 On Ansable, Globe and Brundaze 1000 25 lots	23 T
On Ausable, 1-100e and brundage 100 % 104s	N N N
Locks and Luches.—Rim and Mortise dis 45 Extra discount for cosh 2 g Till and Cupboard	2 2
American Padiocks	N N
F doz	N W W
Thumb and Roggens Latches. dis 25 Lauterus.—Square Candle and Oil dis 10 Globe for Oil dis 10	MANA
Tubular Lanterns	MANAM
Pennsylvania Pattern dis 15 Molusses Gutes. Enterprise Mg. Co.'s Measuring Faucets dis 20	2 1
Pennsylvania Pattern dis 15 Molusarea Gattern dis 15 Molusarea Gattern dis 20 d	MMM
Taylor's Petroleum Faucets	INAM
WOOGTUE	AAAAA
Pluque,—Auburn Tool Co., "Bench"	MAN
Hale's Clis 27	et et 50 et
Pittaburgh	et
Wm. Johnson. (Stanley List)	MAN
Wood Head Iron Teeth	2 2
Wm. Johnson, (Symptotic List)	00
8 doz	00
Clipper No. 10, Boxed and Sharpened doz \$10	50
S uares.—Steel and Iron new list. dis 5	200
Printed by Printed.	
W. McNicc's H'd. Cross-Cut & Circ'r, new list dis Boynton's Lightning, new list	0%
W. McNiece's H'd. Cross-Cut & Cire'r, new list. dis 1 Boynton's Lightning, new list. dis 1 Bhoyels aud *Spades, Ewiland's Plain Back, list Feb. 1573. dis 20&: Back Strap dis 20¢. Oliver Ames & Sons. hew list dis 12¢. Braity Spayal.	00 %
Crmmon Scythes. 11 S nares. Steel and iron new list. 48 of 5700 6 il 5 nares. Steel and iron new list. 48 of 5 nav. Disaton's Pland. 5 coss Cut & Circ'r, new list dis 13 lb MoNisce's H'd. Cross-Cut & Circ'r, new list. 48 lb Doynton's Lightning, new list. 48 Shovels and 5 pindes; Lightning and 12 pindes; Lig	0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0
W. MoNicee's H'd. Cross-Cut & Circ'r, new list. dis 1 Doynton's Lightning, new list. dis 1 Shovel's Lightning, new list. dis 2 Shovel's Lightning, new list. dis 2 Shovel's Rack Strap Olive Back Strap Olive Ance & Sons	0 % 0 % 0 % 6 c. (c. 128 190) 300 220
Stone — Arkansas Oll, No. 1. Ph * Turkey Olt, No. 1. Washita Extra. 4 No. 1.	200 200 200 180 180

this or

necks to our

Locks

cope eys,

S, onn.

Co.

and

licited. ETTE e applied

100		-
1	Plated Spoons, Rogers Bros.'new list dis 30 @ 30&5 \$	l t
1		3 t 3 %
97 9	Laiance & Grosjean Iron. dia 40 % spring — Gray's Door. dis 40 % Torry's Door. dis 40 % dis 15 %	Ove X
2 787	Sinve Polish,—Gem. Fgross, \$900 5500	Ha.
1	Stanley Rule and Level Co. dls 45&10 % Willis Thrall, No. 2 dls 30&10 % dls 45 & dls 40 % dls	% hee
7	Stove Polish - Gem. Scot Scot	
	Praps.—Genuine Oncida—Newhouse list	Al
1	Wrenches.—Coes Genuine # 15 net 15c	3-1 Be
	" Malleable Bar dis 60 % " (Kellogg) Malleable Bar dis 30 @ 10 %	1 % 1 %
	" Malleable Bar dis 80 % (Kellogy Malleable Bar dis 80 % (Kellogy Malleable Bar dis 50 % U.S. Tafta Pattern (Wrought Bar) dis 66-kit % Reilogge's (Nail Bar) dis 66-kit % Philadelphia Tool Co.'s Pat. Duplex dis 25 % 1 mirroved Baxter dis 25 % Adjustable Fork. dis 25 % Adjustable Fork. dis 26 % No. 19 to 28 dis 45 % No. 21 to 38 dis 45 % Adjustable Fork. dis 46 % 47 % % Coppered to 12 dis 15 % 20 % Tinned Broom Wire. dis 26 % Mis 20	F
	Wire.—No. 0 to 18	F
	No. 27 to 36	TI
1	_	Phil troi
6	BUFFALO.	Flat Iron Non
4 34 54 9	Reported by Mosses, Sidney Shepard & Co.	Bee
N NE N	March 28, 1874.	Fer %
0	Augers-C. S. Cut, French, Swift & Codis 30&10 % Bits, Auger-Pierce s	Car Plo Sto
A 50 K	Snell Mfg. Codis 20 % Jenningsdis 10 %	Mac Cor Bol
2 2 2	Bells, Cow—Yaw's Genuine	Hai 1
38.38.58	Diamond Neck	Pat Ske
発生が	Brads, Cut	Scr
PA 194 314	Butts—Brass	Scr
R 18 84	" Japanneddis 45 %	Str
1 24.0	Wrought Narrowdis 20 \$	Car
W 160	" Broad, Loose Joint dis 35 % " Table and Back Flansdis 30 %	1
4444	Wrought Butts, Loose Pin	9
% Sc	Leather new list	W:
ld	Brick—Bath (box of 2 doz) Best English	1
a se a	Chalk—White, Carpenter's	1
14 34	Biue, " 90c Chisels—Firmer Socket dis 60&10 %	5c
A A 34	Framing Socket	W
60	Slick's Carpenters'dis 60&10 %	Si
00	Cherry Seeders	***
00	Cherry Seeders. P	W
on on	Freezers lee Cream—" Champion	St
20	Hinges - Window Blina - Gle 33% Hinges - Window Blina - Clark's No. 20 55&10 5 5 5 5 5 5 5 5 5	De
50	Shepard's Standard, and Clark sdis 50 % Wrought Strap and T	St
8	Funnel, Black and Galvanizeddis 10 %	W
75	Fancy and Helmet	N K
700	Yerkes & Plumb's. dis 5 @ 10 & Hooks and Staples—Wrought dis 50&10 & Works—Relt	W
old	Husps and Staples—Wrought	w
old	Kewles—Brass. # B.50 @ 55c Euameled	D
00	Kazor Blade	CTNT
00	Gem. with guards	M
9 %	Machines—Apple Paring. "Reading." \$8:00 @ 8:50 \(\pi \) oz Mills. Conce—Box and Slide, common	1
5 %	"American" dis 10 % Nells—Clout and Finishing dis 73 %	1
0 %	Horse, AusableNo. 5 6 7 8 9 10 30 27 25 24 28 22c	
4	Horse, Ausable No. 5 7 8 9 10 30 27 25 24 28 22c	7
4	Horse, Ausable	7
8 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Horse, Ausable No. 6 7 8 9 10 30 27 25 24 28 22 22 22 22 24 28 22 22 22 22 24 25 22 25 22 25 22 25 22 25 22 25 22 25 25	7
3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Finished & Pointedadd ic # 5	Т
3 50 4 3 5 5 5 5 5 5 6 10 22 28 21 10 25 5 5 5	Horse, Ausable	7
3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Horse, Ausable	Т
3 5 5 4 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Horse, Ausable No. 6 7 8 9 10 30 27 25 24 28 22 6 17 25 24 28 26 7 27 25 24 28 26 7 27 25 24 28 26 7 27 25 24 28 26 7 27 27 25 24 28 26 7 28 9 10 9 1000 lbs Add to 9 8 7 1000 l	7
3 50 4 3 5 5 5 5 5 5 5 10 22 28 11 10 20 5 5 15 7 20 7	Horse, Ausable	1
3 50 4 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Horse, Ausable	1
3 50 4 3 5 5 5 10 222 211 20 22 211 20 22 211 20 22 211 20 22 211 20 22 211 20 22 211 20 22 211 20 22 211 211 212 213 214 215 216 217 217 218 218 219 219 219 219 219 219 219 219	Horse, Ausable	1
3 50 4 3 5 5 4 5 5 4 10 222 221 10 22 25 5 5 7 15 7 7 16 7 7 7 7 16 7 7 7 7 16 7 7 7 7 7 16 7 7 7 7 16 7 7 7 7 16 7 7 7 7 16 7 7 7 7 7 16 7 7 7 7 7 16 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Horse, Ausable No. 6 7 8 9 10 "Finished & Pointed add to # 8 1000 lbs.	1
3 50 4 3 5 5 5 6 10 228 10 228 10 228 10 25 5 7 7 7 7 10 10 10 10 10 10 10 10 10 10 10 10 10	Horse, Ausable	1
3 50 4 3 5 5 5 6 10 22 23 10 25 5 7 15 15 15 15 15 15 15 15 15 15 15 15 15	Horse, Ausable No. 6 7 8 9 10 "Finished & Pointed And I c P B "Clinton No. 6 7 8 9 10 "Guston No. 6 7 8 9 10 "Guston No. 6 7 8 9 10 Packings—Rubber 22 20 19 18 17 Pencils, Slate—Scopsione 4 5 6in. Case lots 5 6 6in. Case lots 5 6 6in. Case lots 6 7 8 9 10 Paint—White Lead, U. S. Gov't 8 9 8 9 50 Rivets—Iron. Black and Tinned 6 18 20 9 25 6 Copper 6 8 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1
3 50 4 3 5 5 5 22 28 10 25 5 7 7 7 7 10 10 10 10 10 10 10 10 10 10 10 10 10	Horse, Ausable	1
3 50 3 55 4 3 5 5 5 10 222 221 10 25 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Horse, Ausable	1
3 50 3 55 3 55 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Horse, Ausable No. 6 7 8 9 10 "Finished & Pointed add ic 9 8 10 "Gils 50 27 25 24 28 22c "Gils 50 27 25 24 28 22c "Gils 50 27 25 24 28 22c "Gils 50 28 25 25 25 25 25 25 25 25 25 25 25 25 25	
3 5 5 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Horse, Ausable No. 6 7 8 9 10 "Finished & Pointed And ic \$\theta\$ 30 27 25 24 28 22c "Ginton No. 6 7 8 9 10 "Ginton No. 6 7 8 9 10 Packings—Rubber 22 20 19 18 17 Pencils, Slate—Scopsione 4 5 6in. Case lots 5 6 6in. Case lots 6 7 8 9 10 Paint—White Lead, U. S. Gov't 8 9 5 6in. Case lots 7 8 9 10 Paint—White Lead, U. S. Gov't 8 9 8 9 6 Rivets—Iron Black and Tinned dis 20 8 25 6 Copper 6 8 9 8 9 6 Rope—Manils, y inch and larger 9 15 20 Rope—Manils, y inch and larger 9 20 Rope—Manils, y inch and larger	
3 5 5 6 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Horse, Ausable	
3 5 5 6 7 7 8 8 5 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Horse, Ausable	
50 4 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Several	
2:50 4 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Section	
7:50 4 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Section	
3:30 4 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Section	1
3:30 4 3 4 5 5 10 10 25 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Section	1
**************************************	Several	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
7:30 4	Section	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
7:30 4	Section	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
7:30 4	Several Corporation	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
7:30 4	Several Corporation	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
7:30 4 3 5 5 5 5 7 5 5 7 5 5 7 5 7 5 7 5 7 5 7	Section	THE STATE OF THE S
7:30 4 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Section	THE RESERVE OF THE PROPERTY OF
**************************************	Section	THE STATE OF THE S
で4 まくちち 1227211027素 元 年末 年末 12 127211027素 元 年末 12 127211027ま 12 127211027ま 13 127211027ま 13 127211027ま 13 127211027ま 13 1272110272	Section	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

T	1	E	_	1	I	<u></u>	77	-	<u>A</u>	G	E.	
R	ou to	nd a	nd	Sqi	inre.	-3c	% to 2	-16		-	.4:0c	
	to to	2% ii 8% ii 0 4 fr	1			8:6c 8:8c 4:8c	% in . 5-16 in % in .	-16			.4°1c .4°5c	
0	% to val	9-16 Ire	in			3.7c	3-16 ln ⅓ in .	d. C	****		.6.9c	
H	n to	Ov.	n l e	nd	Hal	1.2c	光 in . word. 光 in.				.4'9c	1
Sh	% to	Yeon	10	to 1		4·7c	% in. Boile	d. C	harco	al.	6.9c Jun. 8.3	4
10.81	1	4	15 21 25	to 2	6 6		5.7		7.2		8.2	1
TT.	A11	sheet	27 8 01	er	28 in. v	vide,	16c. 8	Th ex	7.6 tra.		3.1	
	3-16 Boi	14 &	% i	n. t	hick	5:3e 5:0e	Plow	Slabs	9,		.5.9c 6.4c	
R	11/4	roa x %.	d I	6 3	in	4.3c	raun 1%, I	k an	d Pu	nche % in	d .8.8c	
E	Fla	t bar	OF B BI	Cu nd	round	to L	Light	thex stang slubs Wing kan kan kan kan band iron.	le and	l wage	on Orac	
	Fla	t bar	s fo	r tir	c	0°1c	Hoop	8			0·3c	
	The	follo	owi	ng s	are the	Car	d rate	es of	Lewi	s, Oliv	er &	
FIN	on orv	Rail Wed	gea.	Rock	pune	hed s	and co	un'eu	nk4	70 W	net net net	
B	eet	Bar le Ri	i (in	r "	lering Pinch	" poi	nt).	for la	ther6	(C)(R	n net	,
F	% I	e Pic	keta , be	nt t	o shap	e,a6e	P ft.	of fen	ce, le	ss 5 % c	ff net List.	
CPS	low tow	Bole Bole	nd s	Tire	Bolts	(nev	v list)		30	&5% C	off net	
C	oac olt	h and End	i La	Squ g S	are He	ad B	olts			.30 % (off net	ı
E	1 t	n. di	am.	3 % 4 % 4	inta c	net; net.	on or	r. dia	m. 3)	ke P 1	casks, b net;	
75.75	kei 7c	nt H	ts, l	n bi	arrow ilk, in 16 in.	Teet lots dian	n. pac of 1 ke 1. be l	ked in	n.ore	8,%0 i ,% in. in. di	diam.	
92	eiz cre	m ne e ia o w He	rder ok-	red.	Eye E	linge	when	less to	dian 1	n. 956	The net of net of net off net casks, b net; Phex diam. am. 9e feach	
92	ne of	w an	d St	ran 6c }	Hinge Hinge	s, 11. 1 t; 8.	ots of	100 pa	airs o	r more	m net.	١
10. mm	cre	w Hi k Ne	tchi	ng	Rings re Iro	18	net.	denve	\$5 \$15	50 30 00 30 d	m net. 14 to m net. comary 100 net loz net	
i	3rid	ge ar	d R	oof	Bolts over	ft. 1	ong.			27 Th 4	se net	1
-	11	o 2 ir	. di	am.	from	1½ to	4 ft.	long.		* 5	%e net %e net %e net %e net %e net	1
	Was	on E	ox i	Stra	WAG D Bolt	ON B	LARDV	TARE.	1000	h-11-	. 55e	- Constitution
-	10		si si	5	-16 at :	0		. e set	01888	44	. 1 000	Manual A.
	12 14 10 12	in. 10	66	-	16	crew	End,	P set	018	bolts.	. \$1.00	
1	14		" or	anel	% %	ii tonal	inch	6.0	- 8	4.6	1 10 1 20 engths	ш
1.	m	ade.		Dad				deen			110	Ш
	Wr	gle T	Irc	Iror n B	olster	et of Plate	four pes, 2%	in. w	lde, 1	act.	38c	
)			66			6	314	66		44	70c	
- 1	Wr	ough	t Ha	umm	ier sti	aps.	neavy	with	rn, es	cn	16 C	1
	Sta	r Cha	Ru tn l	b In	rons, e ks, eac	ach ch	ine. Os	rure 1,	each		11 0	1
6	Str	ap B	nîta	R	ods. 8	ingle	Tree	" 2, " 8,	each each s. Bo	olster	10 c 12 c Plates,	
	B H Wa	rake ooks	Rate	chet Cli Star	s, Han ps. in oles 13	nmer lots o	Strap of 100 % in. t	s, Rub sets	Iron	1000 #1	Plates, y Chain dis 25 % 2 50 net 8 50 net	
6	Ne	x Yo	ke,	Eye	B, each	h % r	ings,	rivet o	n. P	1000	8 50 net % c net 8 c net	
tut	Kir Wa h	gon lead,	lts, Rive 4. in	36, 1 to. 6	x. lars	nd 15 re, fla leng	t, ove	llam	steep	le "	8 50 net 8 50 net 5 c net 1 c net c extra c extra 17 c net 19 c net	
8 8	Wa	gon	Hive	de	Nails,	in 5 f	b pape	r box	es	P 10 1	e extra	1
CK	Do	nble	fre	Pl	ates	3-	16 in.)	44 ID	9 c net	
2	To	ngue ck Y	oke Can	Plat	tes	9.4.9	iz in	wide	4ame	nrice	12 c net P B as	
0 0	Wa	and gon	Cha	ina.	Stay	Lock	and T	ongue	, 5-16	in. W	B 11%	c
N N N	A	06	i iii.	- 10	7gC. MC							
MAR					D	ΕŢ	R	TIC				1
C	me	PI						Percett		oot.)		1
5	i	C, 10 X, 10 X, 1	r14. r14. 0x14			. \$13 (. 15	10 8 35 6 30 P	conne	ng	toms.	36c	1
%	Î	C, 12 X, 12 C, 14	x12. x12.		Plate .—Bes (20, 20, 20, 228, 228, 28, 28, 28, 28, 28, 28, 28,	16:	0 8	Boiler	Size	14x48 No. 7	e 17. 41 43 43 43	000
% C %	2	X, 14 (X, 1	x20 4x20 14x	20.		. 16 . 19 . 22	5 P	Sprall	Piere	make r	1800	6
% C %	1	OC, 10	X, 1	1x2)	. 12 !	50 5	older No. 2.	-No	. 1	18	CCC
*	1		X "X	100	Plate	20	10 B	right heet l No. 18	Am.	Com.	5 5	8
10	1	X, 10 C, 10 X, 10	kx 14 bx 14 bx 14	W.		. 12 5	50 Pa	No. 24 t. Am Nos. 2	Am. Rus 1. 25 d	Com. sia "A k 25	5 5	0
1 M M 12	B	C, To	rne	14x	-Bes 20	. \$12 . 15	7. Pa 25 Ri 00 W	t. Plan assis N D. WO	nishe io. 9, od's	d Russ 10, 11& & CO.	nia	C C T
MAN	C	C. To	rin	201	28	. 80	50	Nos. 1	to 2	Smo	oth#6 1	0
4 00 4	1	C, 10 X, 10 C, 14	x14, x14, x20,	Col	ke	13 12 (25	H 2	1 to 2	Char	7 78	00
AMM	81	ieet	Zu	ıc	Any	width		*****			10	c
***				C	IN	CI	N	NA	ÇT,	I.		
AMA	Re	port	ed b	W &	Sellew	& C	b., In	nporte	rs a	nd Jo	bhers	
et	т	n P	in to	6. C	I.C. 10	0x14 C	hare	oal		\$12-00 15:50	@ 144 @ 174	103
75		. C.	Ter	ne l e 20	14x20 0x28			*****		21 90	@ 141 @ 171 @ 121) @ 251 281	50 50 00
25 4c	84	Pice	TI	17.	971	e 62.9	Ser Di	ire		*****	. ge m a	DC.
6c C	1.	ead.	P	ig.	W D.73	(CG)	e. B	nr		1	8c@	9c
bs 0:	-	Ingo	she	d	, n	G 4	Oc Si	razier	6 to 10 to	9 'b 12 10 b	. 11 115	le Se Se
14								opper	Bott 	ome .	11	e ce
% Se		Slab.					*****			- 40	814c @ 1	9c tle
10	-	1		30	to 30. %	6	ēc p	ire, N	20	to 25	. 0	00

Metals, No. 214, 216 and 218 Main street.
Tin Plate, -1, C. 10x14 Charcoal \$12.00 on 16x L X. 10x14 Charcoal 15.90 on 170 l L. C. Terne 14x20 11.00 on 17. L. C. Terne 14x20 12.00 on 17. L. C. Terne 20x25 24.10 on 25.00 L C. Continuous 24.10 on 25.00 l L C. Continuous 25.00 on 17. L. C. Terne 20x25 25.00 on 17. L. C. Terne 20x25.
Pigs 37%c @ 88c Bars @ 15 39
Solder
I.padPig., W D.7% C @ Sc. Bar W D SC @ S
Copper I Sheets 6 to 8'h 20 m 41
Plantahed ** @ 40c ** 10 to 12 to ** 33
Ingot Sheets, 6 to 9 'b
Sheathing. 6 35c Braziers 13 b 35 Copper Drops 37c 6 38c Copper Bottoms b 11
Zinc.—Cask, 500 to 1000 lbs 9 b 11
Case, 100 lbs
Slab " 856 @ 9
Brass. Roll, No. 38 to 40, 30 h 50
Copper Drops Sic 6a Sec Copper Bottoms 12 June - Casek, 50 to 1000 lbs 11 Sine - Casek, 50 to 1000 lbs 15 In Sine - Sec 100 lbs 15 In Sine - Sec 15 In Sine -
Babbit Metal Black Lead P 2 5
Sellew & Co P & SSc Market 15
Antimony
Blamuth or h so t
NickelP 5 831
Procede To 9 20e @ 22e 4 4 R 4 18 @ 14
Smooth Smoot
Steel From - Russia
15 to 20
22 to 24
366·4c 8·0c 9·4
276.60 9.20 . 9.6
Galvanized IronFull bundles
22 to 2416c 28
Bar Steel.—Silver, # n 21c; Crescent, 17%c.
Iron Wiredis 25
Enameled Waredis 3314
One Piece Corrogated Elbowsdis 10
Ton Wire
Charcoal Iron. Russia Iron.
414 Inch # doz #8"/5 4% Inch # doz #8"
6.06 151/ 11
0 4
9 44 4 44 650 7 44 144
6 " " 5.25 5½ " " 18. 6 " " 525 6 " " 19. 7 " " 650 7 " " 14. Leader Elbows Flat Crimp Retinued. " 40.
19 dos l
2-Inch. \$2 00 24-inch \$2 8-inch \$2 60 38-inch \$3
8-inch 2 50 8%-inch 8
4-inch \$ 50 4%-inch
Sheet Fron Bread Pans 4 dos 115
Timmen's Mcchines



TO ALL WHO USE STEAM-POWER!

We will put our Governor on any Eu gine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

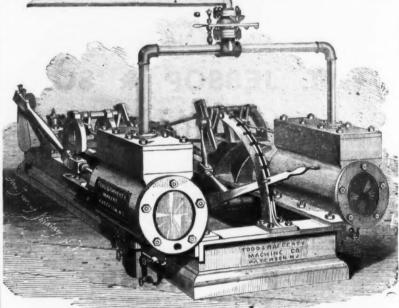
BETHLEHEM, PA.

SHIVE'S PATENT WATCHMAN'S CLOCK AND DETECTOR.

The Best and Cheapest Watcher of the Watchman made.

PRICE ONLY \$15. Circulars sent free.

TODD & RAFFERTY MACHINE CO., DOUBLE REVERSING HOISTING ENGINE.



Also Lowe's Patent Tubniar and Flue Boilers, Greene's Patent Cut-oft, and Plain Slide Valve, Station tionary, and most approved Portable Engines. Boilers of all kinds, Steam Pumps. Mill Gearing and Shafting, Flax, Tow, Hemp, Rope, and Bagging Machinery. Machinists' Tools. Agents for Judson's Governors, Sturievant Blowers, Differential Pulley Blocks, and all kinds of Wood Working Machinery.

JOHN H. HOPPER, Secretary.

J. C. TODD. President

Warerooms, 10 Barclay St., N. Y. Works, Paterson, N. J. Picase eay what paper you read advertisement in.

Cold Rolled Shafting.

Best and most perfect Shafting ever made, constantly on hand in large quantities, furnished in any lengths up to 24 feet. Also Patent Coupling and Self-Oiling Adjustable Hangers, Fulleys, &c.

Sturtevant Blowers,

Railway Machine Shop Tools

GEORGE PLACE & CO., 121 Chambers & 103 Reade Sts., N.Y.

MILO PECK & COMPANY,

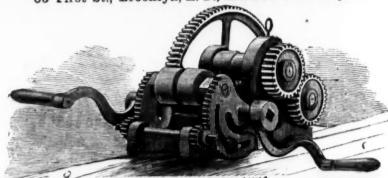


MANUFACTURERS OF PECK'S Patent Drop Press,

157 TEMPLE STREET,

New Haven, Conn

Guy C. Hotchkiss, Field & Co., 85 First St., Brooklyn, E. D., and New York City.



Patentee January 13, 18/4.

d to supersede all Tire Benders now in use, especially for heavy work. The emoved and readjusted, thus allowing Tires to be with rawn without difficulty less and Tires never slip while being bent in this Machine. One man can bend

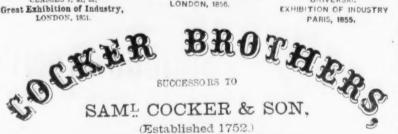
Manufacture Carriage Materials, Axles, Springs, Blacksmiths' Supplies, Bolts, Wood Work, Trimmings, &c.

Steel.

et CLASS PRIZE MEDALS. CLASSES 1, 21, 22, Great Exhibition of Industry,

SOCIETY OF ARTS & INDUSTRY. LONDON, 1856.

PRIZE MEDAL, CLASS 15 UNIVERSAL.



SHEFFIELD, ENGLAND

MANUFACTURERS OF

CAST, SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION. SEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES; Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS, HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS, FISH HOOKS, NEEDLES. &c.

GENERAL MERCHANTS.

JESSOP SONS,

AND IMPORTERS OF IRON

SHEFFIELD, ENGLAND.

PRINCIPAL DEPOTS: NEW YORK, Nos. 91 d 03 John Street. BOST ST. LOUIS, No. 714 North Second Street. BOSTON, No. 141 Federal.

AGENCIES: PROVIDENCE, Nightingale & Kilton NEW ORLEANS, Folger & Co. .SAN FRANCISCO, Huntington, Hopkins & Co

F. W. MOSS,

SHEFFIELD, ENGLAND. MANUFACTURER AND IMPORTER (

STEEL AND FILES. Principal Depots: 80 John St., N. Y., and 512 Commerce St., Phila.

MOSS & GAMBLE SUPERIOR C. S. "FULL WEIGHT" FILES. Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURN PUNCHES and all kinds of MACHINISTS TOOLS, DRILLS, COLD CHISELS, Celebrated Improved Midd Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size. Sweds Spring Steel, especially adapted to Locomotive and Railway Car Springs. English Spring and Plow Flate Steel. Also, manuacturer of

Steel Cast Steel, Shear, German, Round Machinery, Hammer, Fork and Shovel Steel
And GENERAL MERCHANT. A. M. F. WATSON, General Agent.

WILSON HAWKSWORTH, ELLISON & CO.,

STEEL, STEEL WIRE, &C.,

CARLISLE WORKS, SHEFFIELD, ENGLAND. AGENCIES:

New York, 72 John Street. Philadelphia, 505 Commerce Street. Boston, 21 Oliver Street. New Orleans. La., III Gravier St.

BARROW HÆMATITE STEEL COMPANY,

BARROW IN FURNESS, LANCASHIRE, ENGLAND.

Steel Rails, Tyres, Wheels, Railroad Iron, Pig Iron, Merchant and Ship Iron,

Axles, Shafting, Boiler & Ship Plates, Bessemer Pig Iron, etc., etc. CHAS. CONGREVE & SON.

Sole Agents for the United States, 104 & 106 John Street, opposite Cliff Street, NEW YORK.

STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

ALSO THE CELEBRATED DOG BRAND FILES

Unsurpassed, if equaled in quality. Bailey Lane Works, Sheffield, England. Warehouse 82 hn St., New York. g ablished 1810.



Steel.

SANDERSON BROTHERS & COMPANY,

MANUFACTURERS OF THE

CELEBRATED

DARNALL WORKS, ATTERCLIFFE FORGE WEST STREET WORKS,

SHEFFIELD, ENGLAND.

IMPORTERS OF FILES, AND

AGENTS FOR ARMITAGE'S GENUINE MOUSEHOLE ANVILS. NEW YORK, Edward Frith, 16 Cliff. | NEW ORLEANS, Rich'd Rhodes, 71 Camp. BOSTON, H. L. Richards, 18 Batterymarch. PHILADELPHIA, Wm. H. Sowers. CLEVELAND, O., Cleveland, Bro vn & Co.

BALTIMORE, Md., Wm. H. Cole. MONTREAL, Saint Paul St. NEW HAVEN, Ct., Atwater, Wheeler & Co.

FRANCIS HOBSON & SON, 97 John Street, NEW YORK,

Sole Manufact'rs of "CHOICE" Extra Cast Steel. Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire. Don Works, Sheffield, England.

JOHN HOGAN, Agent.

C. WARDLOW.

Cast and Double Shear STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 13 Gold Street, New York.

class makeral in quality, tempor, and durability is needed

G. SANDERSON & CO.,

STEEL.

Bailey Street and Broad Lane Steel Works, SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c. ALSO STEEL of superior quality for Turning Tools, Taps, Dies, Orills, &c. Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c. *Makers of the Celebrated ROCK BORING DRILL STEEL. Warehouse, 57 John Street, New York.

JOHN A. GRISWOLD & CO.,

Troy, N. Y.,

Office in New York City, 56 BROADWAY.

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

AGENCIES IN BOSTON AND PHILADELPHIA.

D. G. GAUTIER & CO.,

Hammered and Rolled STEEL of every description JERSEY CITY, NEW JI RSEY.

CHROME STEEL COMPANY,

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET-EITHER ENGLISH OR AMERICAN-

FOR EVERY PURPOSE. Works and Offices-Kent Avenue and Keap Street, Brooklyn, E. D., N. Y.

Principal Agencies:

Hall, Kimbark & Co., Chicago, Ills. Harris, Rice & Co., St. Louis, Mo. Horace P. Tobey, Boston, Mass Cleveland, Brown & Co., Cleveland, Ohlo. Wood & Leggat, Hamilton, Ont.

Steel.

Sheffield Steel Works (Established in 1848.)

SINGER, NIMICK & CO.

Pittsburgh, Pa., Manufacturers of Extra Quality Tool

CAST STEEL

Patent Rolled

SAW PLATES,

All descriptions of Cast and German Spring and Plow Steel.

Elliptic and Side Springs, Seat Springs, AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators, Reaper Hars, ow Bars, &c., &c. Warehouse, 83 Water and 100 First Stree

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works Wolverhampton, England,

"Jenks" Spring Steel, Cast and Swedes Spring Steel,

TIRE, TOE CORK, SLEIGH SHOE. BLISTER & PLOW STEEL.

Also, Plow and other Iron. VAN WART & McCOY, Agents,

43 Chambers St., New York. full assortment of "Jenks" Spring Steel in stock

MILLER, BARR & PARKIN, Crescent Steel Works. PITTSBURGH, PA.,

Manufacturers of all descriptions of STEEL

EQUAL TO ANY IN THE MARKET. Office..........339 Liberty St.,

PITTSBURGH, PA.

Gunpowder.

GUNPOWDER

DUPONT'S

Sporting, Shipping, and Mining POWDER.

DUPONT'S GUNPOWDER MILLS ESTABLISHED IN 1801,

Have maintained their great reputation for?) years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle and Diamond Grain Powder. Also, SPORTING, MINING. SHIPPING, AND BLAST.

ING POWDER of all kinds and description For sale in all parts of the country.

F. L. KNEELAND. 70 Wall Street, NEW YORk

LAFLIN & RAND POWDER CO., 21 Park Row, New York,

avite the attention of the the Hardware Trade their facilities for delivering

BLASTING, MINING and RIFLE POWDER

IN EVERY PART OF THE UNITED STATES. from having agencies and magazines at all promise points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands

Orange Ducking Orange Rifle, Lightning, Audubon.

SAFETY-FUSE at wholesale.

nd

E.

S,

KS,

ET.

linino

ILLS

for ?)

Rifle

BL431

rk, Trade to

RIFLE

TATES. рготіне

Balti-

brands

ucking,

sale.

Wto.

1,

Steel.

HUSSEY, WELLS & CO.

CAST STEEL,

Best Refined Steel for Edge Tools.

PARTICULAR ATTENTION PAID TO THE MANUPACTURE OF STEEL FOR

Railroad Supplies, Homogeneous Plates

Smoke-Stack Steel, Cast Steel Forgings for Crank Pins, Car Axles, &c. ALSO, MANUFACTURERS OF THE CELEBRATED BRAND

"Hussey, Wells & Co. Cast Spring Steel," For Elliptic Springs for Railroad Cars & Locomotives.

PENN AND SEVENTEENTH STS., PITTSBURGH, PA.

BRANCH OFFICES:

30 Gold St., New York. 13 & 15 Custom House St., Boston. 54 Fifth Ave., Chicago.

Pittsburgh Steel Works. ESTABLISHED IN 1845.

ANDERSON & WOODS,

MANUFACTURERS OF REFINED CAST STEEL,

Cast and German Plow and Spring Steel, FIRST AVE., AND ROSS ST., PITTSBURGH.

BRANCH HOUSES: treet, Boston.

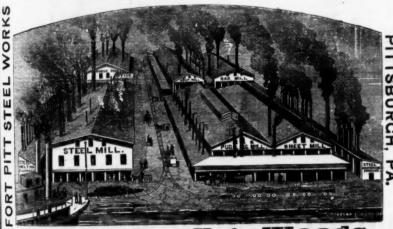
C. H. WHITNEY & SON, 142 Greenwich Street, New York.
W. F. POTTS, SON & CO., 1225 Market Street, Philadelphia.

LABELLE STEEL WORKS!

REITER, LAVELY & CO.,

TEEL

Also, Springs, Axles, Rake Teeth, &c. OFFICE & WORKS, Ridge, Lighthill & Belmont Sts., & Ohio River, Allegheny. Post Office Address, Pittsburgh, Pa.



Reese. Graff & Woods.

Morse Twist Drill and Machine Company,

New Bedford, Mass.,

SOLE MANUFACTURES OF MORSE PATENT STRAIGHT-LIP INCREASE TWIST DRILL.

BEACH'S PATENT SELF-CENTERING CHUCK. ALSO MANUPACTURE

SOLID AND SHELL REAMERS.

All Tools exact to Whitworth's Standard Gauge.

DRILLS MADE TO FIT ANY SOCKET DESIRED. EDWARD S. TAB R. Treasuper.

HINE, DIBBLE Manufacturers of the



Adjustable Steel DRILL CHUCK, Interchangeable Bolt &

Nut Threading Machine, Nut Tapping Machines,

all other kinds of Bolt and Nut Machinery. New Haven, Conn.

CHICAGO. (Reported by Markley, Alling & Co.) Porcelain Wheel Plate..... Iron Wheel Bed.

| Long Paring | dis 30 % | Sire | Corner | dis 30 % 30 % | dis 30 % |

| Hammers. | Aeriks of Fining |

Grub Hoes. A. Finish, No. 2.

Pinnes.—Ohlo Tool Co., Bench.
Sciota.

A. Howland & Co., Bench.
Fancy.

| Sand | Irons | Best A No. 1 | \$\psi\$ | \$\psi\$

| Select | S

Crane's BisicX No. 3. 12 00
Preston, Black Scoops 6. 12 20
No. 5. 12 20
No. 5. 12 20
No. 5. 12 20
No. 5. 13 00
Haif Pol. Scoops No. 1. 12 20
No. 5. 13 00
No. 5. 13 00
No. 5. 14 20
Lippineott, Haif Pol. No. 5. 14 20
Wrenches.—Taffer No. 5. 16 00
Wrenches.—Taffer No. 5. 16 00
Wrenches.—Taffer No. 5. 16 00
Universal Clothes Wringer 2 doz 569 00
Universal Clothes Wringer 2 doz 569 00
Universal Clothes Wringer 2 00

Chicago Metal Market.

(Reported by Cragin Bros. & Chandler, 141, 143, and 145

| dis 25 | dis 26 | dis 27 | d

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 42 to 48 Bat terymarch St. Chopper's Pride, Bronzed. Red Cross, Red...... Red Cross, Handied.....
 Red Cross, Handled
 13 50

 Boy's Handled Blue Jackets
 12 00

 Hunts Axes
 \$\psi\$ doz \$15 \tilde{0}\$ 17 50 net \$\tilde{0}\$ 52

 " Hatchets
 net

 Shingling Nos. 1, 2, 3
 \$\psi\$ doz \$7 25 8 00 8 75

 Claw
 1, 2, 3
 " 7 75 8 50 9 25

 Lathing
 1, 2, 3
 " 50 8 25 9 00
 Axe Handles, Hickory, Fisher Pat. No. 1 p doz \$2.72 Hickory, Fisher Pattern 2 2 20 0 0 k 1 2 2 2 2 2 2 3 3 156 Brass Butts. dis 5
Wrought Table Butts and Back Flans. dis 5
Wrought Table Butts and Back Flans. dis 3
Carriage Jacks. - Young America. dis 6
Carriages. U. S. Carridge Co. dis 5
Carriages. U. S. Carridge Co. dis 5
Carriages.

Boston Metal Market.

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.
America Americana 20 m mold 12a
Anvils.—Armitage
Wilkinson's " 1250
Apple Parers.—Conqueror
A MARIA A MARIA MA
A xes.—Hunt s
A xea - Hunt s P doz \$13 00 \(\alpha \) 13 50 Lippincott's 12 00 \(\alpha \) 13 50 Lippincott's Pioneer 18 00 \(\alpha \) 13 50 Simmons' 12 00 \(\alpha \) 13 50
Simmons' 12 00 66 18 00
Axles Kritch & Crane Mfg. Co. s- Patent Taper Axles
Swelled Taper Axleshew list net
Concord Axieshew list net
Red Jacket Axlesnew list net Common Axles, 1½ inch and upward # 15, 84 c
" less than 1½ inch " 8%c Bellows.—"Best St. Louis make" 60c 2 in. dis 20 5
Bellows.—"Best St. Louis make" 60c ≥ in. dis 20 ≤ Bells.—Troy, Church ⊅ ⊅, 50c
Light Brass, Handdis 50 %
Moore's, Cowdis 20 %
Bolts.—Arms, Bell & Co. s Machine
Cast Butt Hinges Western Butt Co.'s-
Narrow Fast Jointdis 35 %
Broad Fast Joint
Reversible dfs 45 <
" Japanned and Silver Tipped die 45 g
Loose Joint " Acorn " "
Lull & Porter's Bland
Wrought Butts,—Narrow. dis 30 % Reversible. dis 25 %
Broaddis 25 %
Back Flaps
Reversible
Trace
German Coil and Halterrevised list add 10 %
Chinels. Socket. Firmer or Framing of a se of
Clothes Wringers.—Crown. 2 doz \$60 co Novelty. 2 do Universul 2 do
Monitor
Corn Knives Dunn E'ge T'ol Co.'s Clip. & doz \$5.55
Crow Bars. Steel Pointed. W B 7@ 9c
Solid Cast Steel
Cutlery.—J. Russell & Co.'s
Files and Rasps.
Files and Rasps.— Nicholson's Files
Files and Rasps.— Nicholson's Files
Files and Rasps.— Nicholson's Files
Files and Rasps
Files and Rasps.
Files and Rasps
Files and Rasps Nicholson & Files Butcher & Mill Hutcher & Mill Hutcher & Mill Hutcher & Lios Horse Kasps Hutcher & Lios Horse Lios Lios Lios Lios Lios Lios Lios Lios
Files and Rasps
Files and Rasps
Files and Rasps
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill Heller's & Lios Horse Kasps Heller's & Lios Horse Kasps Handled Hoes Missed's Planter Eye Hoes Handled Hoes Missed's Planter Eye Hoes Handles
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill Heller's & Lios Horse Kasps Heller's & Lios Horse Kasps Handled Hoes Missed's Planter Eye Hoes Handled Hoes Missed's Planter Eye Hoes Handles
Files and Rasps Micholson & Files Butcher e Mill Micholson & Files Butcher e Mill Mill Forks and Hoes Auburn Mg. Co.'s Hay and Manure Forks Handled Hoes Missel e M
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill Hiller & Lios Horse Kasps Heller & Lios Horse Kasps Hadded Hoes Missed & Lios Horse Kasps Hadded Hoes Missed & Hamded Hoes Missed & Planter Eye Hoes Missed & Missed & Plumb Missed & Missed & Plumb Missed & Miss
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill Hiller & Lios Horse Kasps Heller & Lios Horse Kasps Grafts and Hoes Auburn Mg. Co. 2, Hay and Manure Forks Handled Hoes Missed & Planter Eye Hoes Handled Hoes Winsted's Planter Eye Hoes Handles & dis 50
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill Hiller & Lios Horse Kasps Heller & Lios Horse Kasps Grafts and Hoes Auburn Mg. Co. 2, Hay and Manure Forks Handled Hoes Missed & Planter Eye Hoes Handled Hoes Winsted's Planter Eye Hoes Handles & dis 50
Files and Rasps Micholson & Files Butcher & Mill Butcher & Mill Butcher & Mill Winsted & Los Horse Rasps Auburn Mg. Co. & Hay and Manure Forks Handled Hoes Minsted & Handled Hoes Minsted & Planter Eye Hoes Masons Hammers Planter Eye Hoes Masons Hammers Butcher & Eye Hoes Masons Hammers Butcher & Eye Hoes Masons Hammers Butcher & Extra Minsted & Planter & Eye Hoes Masons Hammers 22c Handles Ave Extra No. 1. No. 2. No. 8. 22c Handles Pick Extra No. 1. No. 1. No. 2. No. 8. 22c Handles First Hoe and Rask Misted & Mi
Files and Rasps.
Files and Rasps.
Files and Rasps.
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill Heller's & Lios Horse Kasps Heller's & Lios Horse Kasps Grafts and Hoes Auburn Mg. Co.'s Hay and Manure Forks Handle Mees Auburn Mg. Co.'s Hay and Manure Forks Handle Mees Auburn Mg. Co.'s Hay and Manure Forks Handle Mees Handle Memers Harrow Teeth Horon Mop. \$12 @ \$18 w Memory Mem
Files and Rasps Micholson & Files Butcher & Mill Micholson & Files Butcher & Mill Heller's & Lios Horse Kasps Heller's & Lios Horse Kasps Grafts and Hoes Auburn Mg. Co.'s Hay and Manure Forks Handle Mees Auburn Mg. Co.'s Hay and Manure Forks Handle Mees Auburn Mg. Co.'s Hay and Manure Forks Handle Mees Handle Memers Harrow Teeth Horon Mop. \$12 @ \$18 w Memory Mem
Files and Rasps.

St. Louis Metal Market. (Corrected Weekly by Messrs. R. Sellew & Co.

Traps.—Newnouse Patent
Yraps.—Newnouse Patent
Yises.—Solid Box
Wilson Mig. Co.'s.
Wrenches.—Coes' Genuine.
Coes' Pattern
Taft's.

Thimble Skeins .- Pump & Skein Co.'s ... dis 50&10 5

Scythes.— 2% extra

Bunn Edge Tool Co. s. Lew list dis 75 %

Paris Furnace Co.'s. Lew list dis 75 %

Shovels, Spades and Scoops.

(Corrected Weekly by Messrs. R. Sallete & Co,
Tin Plate.

1C. 10x14. Charcoal... \$18.00 | 1C. continuous.
1X. 10x14. Charcoal... \$18.50 | 1X. continuous.
1X. 12x12. | 16.00 | 1X. continuous.
1X. 12x12. | 16.00 | 1X. continuous.
1X. 12x12. | 16.00 | 1X. continuous.
1X. 12x212. | 16.00 | 1X. continuous.
1X. 12x22. | 17.00 | 1C. 10x14. good | 11.50 |
1X. 13x23. | 17.00 | 1C. 10x24. good | 11.50 |
1X. 13x23. | 15.50 | 1C. 10x24. | 12.50 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 12.50 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 12.50 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 | 1C. 10x20. | 10x20 |
1X. 20x25. Terne | 20.50 |
1X. 20x25. Terne |

Woodruff Iron Works,

HARTFORD, CONN.,

Office, -

No. 223 State Street.

WOODRUFF & BEACH STEAMMENGINE.

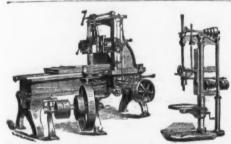
Manufacturers of the Celebrated

With Recent Improvements.

STEAM BOILERS

Constantly on hand, and made to order-of any size or style. Special attention given to all kinds of

MILL MACHINERY & CASTINGS.



MACHINISTS' TOOLS



THE PRATT & WHITNEY COMPANY, Hartford, Conn.

RICHARD DUDGEON.

No. 24 Columbia Street, New York,

Hydraulic Jacks and Punches,

ROLLER TUBE EXPANDERS

And Direct-Acting Steam Hammers. Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS made to order.

The "EMPIRE," a Fan Blowing PORTABLE FORGE,



Without BELTS or BELLOWS. it is more Ensily Worked, gives a Better Blast, and is the Cheapest forge made, and

It has no Back Draught.

P. KELLOGG & Co., Troy, N. Y. And 84 Chambers St., N. Y.

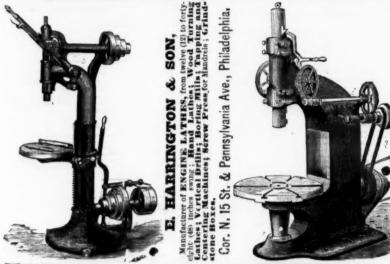
Also Curry Combs, Boring Machines, and Cooley's Whip Racks. etc , etc.

LINCOLN'S MILLING MACHINES.



PHŒNIX IRON WORKS.







Gauge Lathes, Screw Machines,

TUB, PAIL AND CHAIR MACHINERY, a specialty, by GOODSPEED & WYMAN, Winchendon, Mass. GUILD & GARRISON'S STEAM PUMP WORKS. Nos. 30 to 34 First Street, Williamsburgh, N. Y.

STEAM PUMPING MACH

Salt, Mudd or Gritty Water, Grain-mash, Syrups all kinds of Beer, Acids, Molasses, and all heavy and thick fluids. Also for Feeding Steam Boil-ers, Supplying Tanks, and for Sugar Refinerics, Tanneries, Oil Refineries, Gas Works, Hotels, Breweries, and for all classes of manufactories: for Draining Min-s and Excavations, and for Rolling Mins, Blast Furnaces and Water Works supplying Cities, Towns and Villiages with Water; also, for Wrecking purposes and Steam Fire Engines for Land and Sea.

Also, Manufactures of Vacuum Bresses

All Work from this Establish-

ment fully Warranted.

The Chuck holding drills from % down to 0. Rana frue on all sizes, and will never slip or "set." Danbury, Conn.

Rote equalled in any essential.

Only Chuck holding drills from % down to 0.

Rana frue on all sizes, and will never slip or "set." Danbury, Conn.

Rana frue on all sizes, and will never slip or "set." Danbury, Conn.

SELDEN PATENT

DIRECT ACTION STEAM PUMP.

Patented August 2nd and December 20th, 1870. Tank Pump, with Boiler

Feed Attachment. For Boiler Feeders.

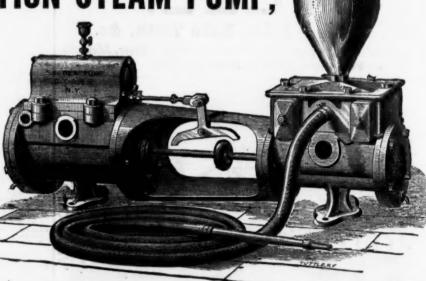
For Water Works, For Fire Pumps,

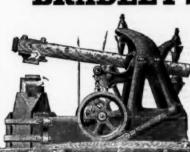
For Mines, etc., etc.

And for all purposes for which Steam Pumps can be used. Sold under full guarantee. Money will be returned if, from any cause, they should prove unsat-Send for Circular and Price List, fully describing them, to

> A. CARR, 43 Cortlandt Street,

New York City.





thereby relieving all the working parts from that jar and concussion which is the destroying element of other Helve Hammers. It is made Adjustable in Line of Action, Length of Stroke, Rapidity of Motion, and Weight of Blow, all of which are controlled at the will of the operator. They have Larger Capacity, Cost Less, are more Durable, take up Less Room, do More and Better Work at Less Expense for Power, than any othe Hammer in use. We guarantee them fully as recommended. For

Bradley Manufacturing Co., SYRACUSE NEW YORK.

CHARLES CHURCHILL & CO., American Merchants & Importers of Machinery

28 Wilson Street, Finsbury, London, Eng. New York House, W. CHURCHILL & CO., 493 Greenwich St., N. Y.

To AMERICAN MANUFACTURERS we offer our services for the introduction, in Great Britain and the Continent, of MACHINERY and TOOLS of improved construction. It is now seven years since we established ourselves in London, and caring that time we have succeeded in establishing a demand which is now rapidly increasing thus proving the value of these goods throughout Great Britain and the Continent. We are now the European Agents for several loadf? American Tool Makers, to whom we will give reference on application to either our London or New York house, ending us catalogues and price lists. We shall be pleased to take up and introduced all such goods suitable to this market. Having successfully introduced American Yises, Chacks, Drills, Drilling Machines, Pamps, and a variety of other tools and household utensis, we are confident all good and useful articles will meet with success.

We are European Agents for The Iron Age, to whom reference may be made.

AMERICAN MANUFACTURERS receiving orders from abroad can communicate with our New York house and execute the orders through us, thus avoiding all risks!

C. CHURCHLE & Co., sits offer their services to all purchasers of Machinery and Tools in Great Britain and Europe who may require special goods, for which quotations will be given up application. A Stock of Tools and Machinery are kept in our London Warehouse for immediate delivery.

Catalogues and Price Lists sent post free on applicatio,



DRILLING MACHINES.

Portable, Radial, Multiple, Vertical, Horizontal, Special.

THORNE, DEHAVEN & CO., 21st. St. above Market St., Philadelphia.



TACKLE BLOCKS

BURR & CO PATENT IRON STRAPPED BLOCES,

POPE STRAPPED BLOCKS, SI PECK SLIP NEW YORK.

Machinery, &c.

ANDREW WATSON, MACHINIST and ENGINEER.

Nos. 537 & 539 Dickinson Street, Near Trenton Avenue, 19th Ward, PHILADELPHIA.

Near Irenton Avenue, 1910 Ward, Philadelpina.

Builder of Vertical Steam Engines and Boilers, peculiar for their economy of space and fuel, safety and quickness in raising Steam. Also, sole manufacturer of Improved Balance Governor with automatic stop, Balance Stide Valve, Safety Valves, Stop Valves, Improved Visions for Engines, which require no setting by the Engineer. Engine Builders and Dealers supplied with Governors, stop Valves, Safety Valves, &c., &c. These governors are fitted up in the very best manner, with brass Valves and Seats, which will not corride or stick fast. Guaranteed to regulate under any irregular load which an Engine is subject to. Milwright work executed, and Machinery in general satisfactority repaired. Engines Indicated Promptly and with the Greatest Accuracy.



BAND SAW MACHINERY

For Ship & Car Builders, Agricultural, Wagon, Pattern and Cabinet Shops.

Perin" French Band Saw Blade KEPT IN STOCK.

RICHARDS, LONDON & RELLEY, 22nd above Arch, PHILADELPHIA.

THE

Shapley Engine

COMPACT,

PRACTICAL. DURABLE,

ECONOMICAL. \$200'00.

Cheaper than any Engine offered of the same capacity.

MANUFACTURED BY SHAPLEY & WELLS

Binghamton Iron Works, Binghamton, N. Y.

Manufacturers of Steam Engines, Bollers, Water Wheels, Circular Saw Mills and Mill Work generally.

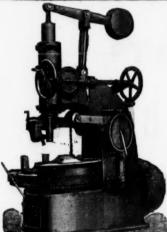






THOMAS WOOD, Admistable Self-Oiling Post Hanger
MANUFACTURES AS SPECIALTIES,
S, with (new) Patent Box Motion. SPOOLING, BEAMING, DYEING and

RS.
MACHINES—wind direct from hank or skein to shuttle bobbin,
at Adjustable Self-Oiling Bearings,
(CTOR IS Sitted out complete with Shafting and Gearing,
to 10 feet diameter, of most Approved Pattern,
SCOUR ING MACHINES, (Yewdall's Patent,)
Work in all their branches, Scad for Frice List of Pulleys & Shafting.



fotion,

Less

d. For

RK.

ıls,

all risks

KS.

OCES,

MACHINISTS' TOOLS

R. R. REPAIR SHOPS.

Gear Wheels of all Descriptions.

which are made absolutely perfect, with Patent Gent Maiding Machine.

13 For Photographs, Prices and Description, etc., address N. Y. STEAM ENGINE CO., 98 Chambers Street, New York

STURTEVANT

Pressure Blowers, Fan Blowers and Exhaust Fans.

10,000 SOLD IN SIX YEARS.

SEND FOR ILLUSTRATED CATALOGUE.

B. F. STURTEVANT, 72 Sudbury Street. BOSTON, MASS.

Machinery, &c.

IMPROVED BOLT MACHINERY.



BOLT HEADER.

Single & Double Head BOLT CUTTERS.

That will cut from 5000 to 10,000 per day. Bolt Pointers, Tapping Lathes, Tire Blank and Rivet Headers, Engine Lathes, &c.

THE Chapin Machine Co.,

New Hartford Conn.

Established 1848.

WM. SELLERS & CO.,

1600 Hamilton Street, PHILADELPHIA.,

Engineers, Iron Founders and Machinists. RAILWAY SHOP EQUIPMENTS.

Our Steam Hammers, Lathes, Planers, Drills and Bolt Cutters Are of Improved and Patented Construction.

Railway Turning and Transfer Tables, SHAFTING & MILL GEARING, a specialty.

Pivot Bridges.

譯GIFFARD'S INJECTOR--IMPROVED, SELF-ADJUSTING. ##

BUSH

Corner 16th & Buttonwood Streets. PHILADELPHIA.

JAMES MOORE,

(Successor to MATTHEWS & MOORE,)

Machinist, Founder and Boilermaker, Engineer, CASTINGS of every description.

ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE.

Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.

Sugar Mill, Saw Mill and Crist Mill Machinery, AND MILLWRIGHTING IN GENERAL.

BOILERS--FLUE, TUBULAR AND CYLINDER, and all kinds of TANK AND PLATE IRON WORK.

THE AMERICAN DREDGING CO

BUILDERS OF STEAM DREDGING MACHINES, GUNPOWDER PILE-DRIVERS, &c.

EATENT IMPROVED BRAPPLE-DREDGE."

IMPROVING RIVERS AND HARBORS, EXCAVATING CANALS, RECLAIMING AND FILLING LOW LANDS, PILING FOR FOUNDATIONS, PIERS, Etc.

Offices, No. 10 South Delaware Ave., Philad'a.

WM. B. BEMENT & SON.

INDUSTRIAL WORKS, Philadelphia, Pa.

STEAM HAMMERS a specialty.

Machinery, &c.

WESTON'S

PATENT DIFFERENTIAL

RATCHET DRILLS,

Machine Finished, Case Hardened and

Interchangeable.

Self-Sustaining Rope Pulley

Blocks

Being worked with a rope the motion is quick and teady, and in many cases is more suitable than the aim block. It is self-sustaining, the eccentric rake being put in or out of action by moving the and-rope to the right or left, or by pulling the rope utward. The weight can be lowered or sustained t any desired point.

VAN WART & McCOY. Sole Agents,

43 Chambers Street, NEW YORK.

JAMES HENSHALL,

Engineer, Machinist & Blacksmith 1056 Beach St., PHILADELPHIA.

Drawings made to order. Repairing of an kind promptly attended to. Blacksmithing executed all its branches.



IMPROVED GAGE COCKS



Automatic Damper Regulator SAFETY, ECONOMY & DURABILITY.
MÜRRILL & KEIZER, Baltimere.
Agents Wanted. Send for Circulars.

BLAISDELL & CO., WORCESTER, MASS,



BLAISDELL" UPRIGHT DRILLS,

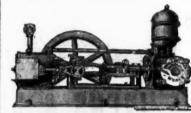
HENRY BLUNDELL & CO., MACHINISTS.

JEWELERS' TOOLS

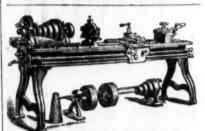
BRASS FOUNDERS & FINISHERS. Barry's Steam Cylinder Packing

PATENTED JUNE, 1872. LITTLE'S PATENT CART HOIST.

For State Rights, and Rights to manufacture, or furthe of ormation, address Nos. 98 to 106 Orange, & 63 to 69 Peck St., PROVIDENCE, R. Price List sent free on application.



PHILADELPHIA HYDRAULIC WORKS Philadelphia, Manufacturers of Steam Pumping Machinery
of every description. Send for Illustrated Price List



MACHINISTS' TOOLS. 13, 15, 16 and 18 inch Swing Screw-Cutting Engine Lathes an PATENT FRICTION PULLEY SEAT Tool Co., Providence

TUBAL SMELTING WORKS, 760 South Broad Street, PHILADELPHIA.

PAUL S. REEVES,

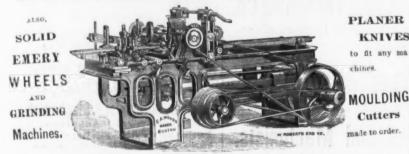
ANTI-FRICTION METALS

XX	K Meta	al Nicke	Harde	lening55 cts. 2 m If These metals are allowed a large percentage of and copper, according	tin, antimony	25 cts. 20 cts. 18 cts.
A	Metat	Copper 1	Hardeni "	These metals are the priced Habbitt alloy there is not much w	o ordinary low)	16 cts
al.	**	0.5	5.5	there is not much we chinery, and where		18 cts.
1.	6.6	6.0	6.6		cconcas is ic-	12 cts
				BRASS CASTINGS.		
				s, 28 to 45 cts. W 7b. Pig Brass, 23, 25, 28, 31, 36, cts a	B b. Importers	of Blo

S. A. WOODS MACHINE CO.,

Planing, Tonguing and Grooving Machines.

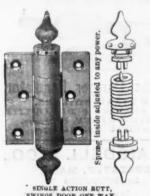
Moulding Machines and Dimension Planers a Specialty.
We also deal in all kinds of Wood Working Machinery, and Iron Tools, Steam Entires and Hollers, Shatting, Pullies and Hangers.



Also agents for Bradley's Cushioned Ham 67 Sudbüry Street, Boston, Mass. Machinery Depots, 91 Liberty Street, N. Y.

THE

American Spiral Spring Butts



Very Desirable

Stores, Banks & Churches, AND ALL

Outside Winter Doors.

National Capitol, Patent Office, Treasury,
Plymonth Church,
A. T. Stewart's Stores,
Booth's Theatre,



Swing doors either way, allowing continual passing, and close them promptly, without noise.



Noiseless Double Action Butt, as seen upon the door, swinging it both ways.

Prices Greatly Reduced, Oct. 1st., 1873.

AMERICAN SPIRAL SPRING BUTT CO., 27 Park Row, New York.

AMERICAN LOCK CO., Cazenovia, N. Y.



Store Door, Drawer and Pad Locks and N't Latches,

PUGSLEY & CHAPMAN,

IVENS & BROOKE PATENT ECCENTRIC GEARED

For Punching, Shearing, and Stamping Metals. Irregular motion of Crank-Shaft corrected by Eccentric Gear. Saves 50 per Cent.

In wear of Dies and Punches and time lost in changing them. At same speed wish the old Press, this give, double the time to adjust the work, issuring accuracy and greater production.

The Patent Adjustment warranted Positive under all pressures, and susceptible of the nicest shade of variation. MANUFACTURED BY

AMERICAN

No. 1 FERRY STREET. N. Y. Bend for Descriptive Circular

FACTORY, TRENTON, N. J.

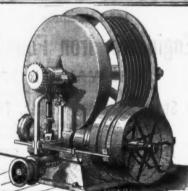
SUCCESS



BEYOND COMPETITION. Nellis' Process in Tempering Steel



THE NATIONAL FAVORITE.



Steam Safety Elevators, Hand Hoisting Machinery,

GEO. C. HOWARD, 17 S. 18th St., Phila., Pa.

Wm. & Harvey Rowland,

NORWAY SHAPES

Springs and Steel,

Frankford, Philadelphia.

Every Mouse in the World to be **EXTERMINATED**



Each Mouse caught resets the Trap for another

54 & 56 Fulton, and 29 & 31 Cliff St., NEW YORK.



WM. ESTERBROOK,

Coal Hods, Fire Shovels, etc., 311 Cherry St., PHILADELPHIA.

EXPORT.

KEUFFEL & ESSER, 116 Fulton Street, N. Y. American Machines, Tools, and General Hardware.





USE THE







WORLD. Samples free to Sextons and Janitors of Public Buildings.

LOOSE POLISH FOR STOVE DEALERS & THE TRADE.



MACHINERY, CAR AXLES, &c.

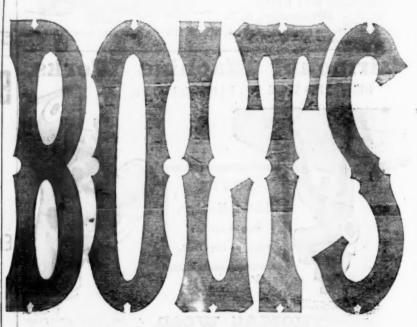
NEW YORK BLACK LEAD WORKS,

172 Forsyth Street, New York.

Plumb, Burdict & Barnard,

BUFFALO, N. Y.

MANUFACTURERS OF



COACH SCREWS,

SKEIN BOLTS,

CARRIAGE

TIRE, SLEIGH SHOE,

Machine and Blank Bolts.

FERNALD & SISE, N. Y. Agents, 100 Chambers St.

WAYNE HARDWARE CO.,

124 Main Street, CINCINNATI 0.5

Elmira Nobles Mfg. Co.,

WATROUS" SHIP & CARPENTERS' AUGERS, Adjustable Handled Drawing Knives, Axes, &c.

ELMIRA, N. Y.